

JPRS 75903

19 June 1980

USSR Report

ENERGY

No. 18

FBIS

FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Indexes to this report (by keyword, author, personal names, title and series) are available through Bell & Howell, Old Mansfield Road, Wooster, Ohio, 44691.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

19 June 1980

USSR REPORT

ENERGY

No. 18

CONTENTS

ELECTRIC POWER

Briefs

Tracking System for Solar Reflectors	1
Solar-Powered Water Pump	1
High-Voltage Cables	1
Insulator for Nuclear Reactor	2
Tidal Electric Power Station	2
Million-Kilowatt Turbogenerator	2

ENERGY CONSERVATION

Enterprises Waste Fuel, Petroleum Products (V. Martynov; TRUD, 9 Feb 80).....	3
Refineries Reduce Electric Energy Expenditures (A. Zadov, A. Rasskazova; SOTSIALISTICHESKAYA INDUSTRIYA, 30 Mar 80).....	6
Misuse, Waste of Gasoline Causes High Consumption (V. Bogdanov; SOVETSKAYA ESTONIYA, 8 Apr 80).....	9

FUELS

Future of USSR Fuel-Energy Complex Outlined (L. Melent'yev, A. Makarov; PLANOVOYE KHOZYAYSTVO, Apr 80).....	13
Progress to Date, Goals of Oil Industry Described (V. Kremnev; NEFTYANIK, Apr 80).....	23
Problems of Improving Personnel Work (A. P. Vesel'yev; STROITEL'STVO TRUBOPROVODOV, Feb 80).....	32

Oil Equipment Production Plans Need Improvement (S. Antsyperov; PLANOVOYE KHOZYAYSTVO, Apr 80).....	46
Industrialization of Derrick Erection Work (M. I. Rabikhanukayev, et al.; NEFTYANOYE KHOZYAYSTVO, Apr 80).....	51
Increased Capacity of Usinsk-Yaroslavl' Pipeline (I. Kulikova; STROITEL'STVO TRUBOPROVODOV, Feb 80).....	57

ELECTRIC POWER

BRIEFS

TRACKING SYSTEM FOR SOLAR REFLECTORS--Solar power installations of small and medium capacity have gained wide distribution in recent years. These small-size "electric power plants" are used most often for pumping water or for irrigation. But the sun must be tracked and held in the focus of the receiving "mirrors." The "SSS-5" system has been developed for just this purpose by specialists of the "Kvant" Research and Production Association (NPO). Its electrical circuit is assembled on the basis of semiconductor components, without the use of electromagnetic relays and contacts in the instrument's power unit. All of this makes the system simple and economical. Its design is reliable and convenient in operation. Electric drives with as much as 2 kilowatts of power are used to pivot the mirrors. [Text] [Moscow STROITEL'NAYA GAZETA in Russian 16 May 80 p 3]

SOLAR-POWERED WATER PUMP--Scientists of the Institute of Solar Energy--the chief organization of the "Solntse" [Sun] Research and Production Association of the Turkmen Academy of Sciences--are working on the development of solar-power engineering devices for various purposes. They include equipment for cooling industrial and residential buildings, desalinization of water, cultivation of algae that are rich in protein substances, and solar hothouses with closed water-supply cycles for the cultivation of citrus crops. [Text] [Moscow PRAVDA in Russian 30 Mar 80 p 3]

HIGH-VOLTAGE CABLES -- Experimental and design work for the development of high-voltage cables with vulcanized polyethylene insulation for a voltage of 110 kilovolts is being completed at the All-Union Scientific Research Institute of the Cable Industry. The new cables have a number of advantages. They are suitable for stringing in difficult areas, they do not require costly oil-filling apparatus, and they are simple to produce and convenient to install and operate. Studies have confirmed that the new products' parameters are equal to those of oil-filled cables. Cables with polyethylene insulation will replace existing lines in the very near future. [Text] [Moscow PRAVDA in Russian 6 Feb 80 p 1]

INSULATOR FOR NUCLEAR REACTOR-- The All-Union Scientific Research and Design-Technological Institute of Electroceramics has developed a special insulator for an instrument that is to be a component of a reactor control system for nuclear power stations. The instrument's location in the active zone of the reactor posed a complex problem. The new insulator is made of ultraporcelain, a material with high resistance to radiation and technical characteristics that make it many times superior to those of ordinary porcelain. The insulator is a tiny part about 4 centimeters long and weighs only 2 grams. It provides reliable insulation for the control instrument. The first lot of insulators was recently delivered to a client. [Excerpts] [Moscow VECHERNYAYA MOSKVA in Russian 22 Mar 80 p 1]

TIDAL ELECTRIC POWER STATION--Ocean tides in the Penzhinskaya Gulf reach the height of buildings that are four to five stories tall. Therefore that part of the coast of the Sea of Okhotsk that is wedged here between the mainland and the Kamchatka Peninsula makes it one of the most promising areas in our country for the creation of tidal electric power stations (PES). Calculations by associates of the Pacific Oceanological Institute of the USSR Academy of Sciences' Far Eastern Center have confirmed the effectiveness of projects for harnessing the ocean's mighty power. Experience with the first Soviet PES on the coast of the Kola Peninsula has suggested new, original methods of construction. For example, it has been proposed that one of such floating dam be constructed in the favorable conditions of an industrial center, say Vladivostok, and then be towed to its site of operation. [Text] [Moscow VOZDUSHNYY TRANSPORT in Russian 8 Apr 80 p 4]

MILLION-KILOWATT TURBOGENERATOR--Leningrad--There is now an addition to the arsenal of Soviet nuclear power: the collective association "Elektrosila" today completed the world's first million-kilowatt turbo-generator for nuclear power stations. "Soviet engineers are supplying nuclear power stations with all the most powerful and economical machines," commented Academician I. A. Glebov, director of the All-Union Scientific Research Institute for Electrical Machine Building. "Before now 'reactor-millioniki' were steam-operated by two generators of about 500,000 kilowatts, but a monoblock is being created which has made it possible to decrease the density of metal used and to diminish capital investments in construction. Nuclear power stations are ever more favorably comparable to other types of power facilities." The first such generator is designated for the Yuzhno-Ukrainskaya AES. Mass production of the generator should begin next year. [Text] [Moscow TRUD in Russian 8 May 80 p 1]

CSO: 1822

ENERGY CONSERVATION

ENTERPRISES WASTE FUEL , PETROLEUM PRODUCTS

Moscow TRUD in Russian 9 Feb 80 p 2

[Article by V. Martynov, inspection chief, Yaroslavl' Administration, RSFSR State Committee for Petroleum Products: "Behind the Facade of Average Indicators"]

[Text] A number of enterprises in the Yaroslavskaya, Kostromskaya and Ivanovskaya Oblasts are showing a lack of interest in the review of efficiency of use of raw materials, materials and fuel-energy resources.

Specialists involved with the questions of the economic use of petroleum products know that if a common 10-cubic tank of gasoline stands uncapped for a year it will lose about one ton of fuel. An unpainted "silver-steel" reservoir loses as much as two tons of fuel in a year. When machinery is filled with fuel and lubricating oil by an unmechanized method, up to 2 percent of the fuel and up to 10 percent of the oil is irretrievably lost. Therefore, managers and trade union organizations should direct special attention to the status of petroleum storage facilities.

Three oblasts--Yaroslavskaya, Kostromskaya and Ivanovskaya--are in the purview of our Yaroslavl' Administration of the RSFSR Goskomnefteprodukta [State Committee for Petroleum Products]. Many enterprises in these oblasts are doing a lot of work to save gasoline, kerosene, diesel fuel and lubricants. Petroleum storage facilities are being built and others are being reconstructed. We already have about 500 standard and about 300 reconstructed petroleum storage facilities. These facilities have more than 2,000 fuel and lubricant service pumps. Mechanization of the equipment refueling process has reached 75 to 80 percent.

But there is nothing more deceptive than "average" indicators. Checks made by the administration's inspection department show that while the collectives of many enterprises and organizations show a careful regard for fuel and lubricants, understanding their full value, there are also managers who are practically unconcerned with questions of conserving these materials.

Petroleum storage facilities are in a very run-down condition at the Rybinsk city trash-collection motor pool (Yaroslavl' Administration of Public Services), the Kostroma Mechanization Administration ("Kostromaoblsel'stroy" [Kostromskaya Oblast Rural Construction Administration]) and the Shujskiy Lumber Combine (Ivanoskiy Lumber Administration). The reservoirs at these facilities are not sealed, which allows precipitation and mechanical contaminants to get into the fuel. About 10 tons of fuel and oil is lost from these tanks each year due solely to evaporation and leakage.

The situation is even worse in enterprises of the Yaroslavl' Administration of the Fuel Industry. These enterprises do not have fuel storage facilities. For storage of diesel fuel they use one or two reservoirs mounted on wooden frames. Tractors are refueled by gravity feed through a hose or simply with a bucket "by eye." Oil is also drawn "by eye." It is no wonder that several tons of fuel and lubricants are wasted every year at each of the enterprises of this administration.

Large amounts of fuel are wasted because vehicles are not equipped with engine preheater systems. Calculated data show that about 300 tons of fuel is expended by enterprises of the Yaroslavl' Administration of Public Services just to warm engines up to optimum operating temperature. No less than 100 tons of fuel is wasted on engine warm-up in the Kostroma Rural Construction Administration, the Ivanovski Lumber Administration and the Yaroslavl' Administration of the Fuel Industry.

It would seem that these facts should alarm managers and trade union committees of the enterprises and administrations. Even more so since, according to the records, they were all actively included in the all-union public review of the efficiency of use of raw materials, materials and fuel-energy resources. Organizational and technical measures are developed here every year for the economical use of petroleum products. But these measures are of little use because they bear a diffuse and non-specific character.

For example, the measures of the "Kostromaoblsel'stroy" includes this point: "Fuel and lubricants will be issued strictly in accordance with daily quotas." But, allow me to point out, administration workers are obligated by their employment instructions to issue fuel and lubricants strictly in accordance with daily quotas. Such lists practically repeat points from employee and technological instructions and can in no way be counted as additional "organizational and technical measures."

Naturally, if these measures are formulated with such little care, then monitoring of their implementation is practically nonexistent.

This is what is not understandable: according to records the state of affairs is very favorable in these enterprises. Moreover, some entities are achieving truly record figures for savings of fuel and lubricants. For example, in 9 months of last year the mechanization administration of "Kostromaoblsel'stroy" was able to save 68 tons of gasoline--22.7 percent

of its total expenditure--and 580 tons of diesel fuel--50.8 percent of the norm. These "records" were made possible by poor inventory procedures and incorrect setting of norms for expenditure of petroleum products.

Here is a shining example, which characterizes the state of accounting for expenditures of petroleum products in this same mechanization administration. According to documents, K-162 truck-crane No 20-00 of the Kostroma Mechanization Administration worked 544 hours in July of last year. The administration's accounting department figured an expenditure of 4,352 kilograms of gasoline for this work--strictly according to the norms. But in fact the crane operator worked less; he had many idle periods. Naturally, he also used less gasoline--only 840 kilograms, confirmed by fuel dump documents. And so, without even knowing it, the crane operator managed to save 3,512 kilograms of gasoline in one month--almost 80 percent of the norm.

Unfortunately, this is not the only administration in which one encounters the fact that the planned norm for fuel consumption by tractors and other machinery is calculated on the basis of shift duration, not on the time of operation during the shift. Thus invalid and false economy is created.

All this could become a subject for discussion at sessions of the PDPS [standing conference on production] and the economic review commission. But the external appearance that "all is well" is obviously keeping the trade union organizations from becoming seriously and earnestly involved in the issue of economical use of energy resources.

In a number of enterprises the issuance of fuel and lubricant coupons is poorly monitored. For example, at the time a check was made at the Pereslavl'skiy city fuel distribution office coupons for 2,000 to 2,500 liters of gasoline were signed out to certain drivers. It was no accident, therefore, that when workers of our administration stood watch at Yaroslavl' filling stations they confiscated more than 200 liters worth of official coupons from owners of private automobiles in just a few days. This is where the extra coupons are going.

The problem of conservation of fuel and energy resources is complex and multifaceted. It must be solved by a composite approach. And a large role herein belongs to the all-union review of efficiency of use of raw materials, materials and fuel-energy resources. It should be comprehensively developed and made more effective to achieve high end results.

12184

CSO: 1822

ENERGY CONSERVATION

REFINERIES REDUCE ELECTRIC ENERGY EXPENDITURES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 30 Mar 80 p 2

[Article by A. Zadov, power engineer, and A. Rasskazova, Chief of Energy-Use Inspection Group, Azerbaijan Main Power Administration, Baku: "To Full Capacity"]

[Text] By night the oil refinery presented a very smart appearance; each of the installations was outlined by a dotted line of bright lights, running up to the height of a 12-14-story building. And it seemed that this was as it should be. It never entered anyone's mind to calculate what this illumination was costing. After all, hundreds of lights had burned on each level of the towering columns for as many years as the installations had existed. This "Christmas tree" was legitimized by all the rules of worker and equipment safety. But still...

A. Martirosyants, chief power engineer of the Baku oil refinery imeni 22nd CPSU Congress, looked upon this light show with chagrin. Was all this illumination really necessary?

How many nighttime raids did Armen Arsenovich make with enthusiasts of the refinery's people's monitor group for combating waste of electrical energy? How many calculations and recalculations were made before a well-validated conclusion lay on refinery director F. Ragimov's desk? The conclusion--the "Christmas tree" must be extinguished. Full-time lighting is required only for the operations post at the very top of the installation, where two or three lights are essential for the safety of passing aircraft. The columns are to be lighted only when personnel are going up the tower and during maintenance periods.

The director spread his arms in submission:

"I agree. You have convinced me. But then this matter is not up to me! There are rules. And there are traditions that, you know..."

The traditions had to be broken.

"I was on duty that first night," recalls the senior operator of plant three, I. Barkhudorov. "In the evenings when the sea of lights came on at twilight I used to get a warm feeling inside: my refinery was shining! But that night the neighboring Novo-Bakinskiy refinery was still all aglow and "Neftegaz" stood out smartly, but our refinery was just a dark void. To be honest, I felt hurt."

"Our veteran workers were especially indignant that their refinery's 'shining smartness' had suddenly disappeared," recalls V. Kosenkov, chairman of the people's monitor group for combating waste of electrical energy. "We spent a long time explaining and proving to them that it was senseless to waste electricity on fireworks. Now they themselves keep a zealous watch to see that there are no extravagances. Recently one of the installations was lighted all night--the electricians were replacing a circuit. Calls came in from all sides--What happened? Why are we wasting energy? By the way, among those who called in were those who two years ago were chiding us for our 'small-change' economy."

"Yes, it was strange at first," Martirosyants agrees. "It seemed that we had somehow cheated ourselves. But the work went on as before. And when the economy was calculated there was a small deduction--600,000 kilowatt hours of electrical energy annually. And then the time came to calculate energy use at NBNZ [Novo-Bakinskiy Oil Refinery], 'Neftegaz,' the Sumgait Synthetic Rubber Plant and many other refineries and chemical enterprises of the republic--kilometers and kilometers of installations. They began to break with tradition there as well. Now there is no end to it. The savings of energy resources just in Baku and Sumgait is expected to be 10 million kilowatt hours annually. This is an impressive figure. This operation, which BNZ [Baku Oil Refinery] jokingly nicknamed 'illumination,' was only one of many such episodes. It grew into a massive and daily struggle for economy. Power engineers and technologists of our enterprise are yearly participants in the all-union and republic-level energy-use competitions."

"For instance, pumping station chief O. Danel'yants, master A. Khanaferov and electrician-installer A. Ashumov were able to save the refinery two million kilowatt hours of electricity. They simplified the water supply system of the installations. Instead of two pumps, which had 'relayed' the sea water needed for cooling, the rationalizers placed the full load on one pump, eliminating the intermediate basin."

"The steam-supply system has been changed in several facilities. They were previously supplied with fresh steam from the TETs. This was replaced by recycled exhaust steam. Then they began using the steam a third time to heat water for the shower rooms. In a year's time this innovation saves 3,000 gigacalories of heat, worth 12,000 rubles."

"Both innovators and power service workers of the refinery are working on the secondary use of thermal and fuel resources. This work was given added impetus by the resolution of the CPSU Central Committee and USSR Council of

Ministers, 'On Providing the National Economy and the Populace with Fuel, Electrical and Thermal Energy in the Fall-Winter Period of 1979-1980'."

Unfortunately, the expenditure of energy resources does not always depend on the collective. In January, for instance, BNZ found itself in a very difficult production situation, which was attributable to suppliers. The Transcaucasus Major Petroleum Pipelines Administration fell short on deliveries of crude oil by 92,000 tons. During that month a number of enterprises were in arrears by 1,500 tons of oil additives obligated to the refinery. As a result of these supply interruptions the ratio of energy use to product output rose sharply. After all, most of the technological processes are continuous and far from all of the equipment can be shut down. However, the refinery's collective found within themselves the wherewithal to smooth out even this situation. In February BNZ surpassed its monthly production goals. And, with the help of the refinery's power service, the energy-use ratio once again achieved high indicators.

A large contribution to the economical use of energy resources is made by the people's monitors. Operator N. Dzhaferov, welder R. Balayan, assistant operator K. Yakovleva and senior operator N. Ramazanov--the best monitors in the enterprise--presented their concerns at a recent technical conference on energy conservation.

Among these things still to be done are: develop and implement technology for the secondary use of exhaust gases, which now carry away a large amount of heat into the atmosphere; modernize the refinery's steam- and water-supply system; completely replace steam power drives with electrical drives; convert rotor assemblies of synchronous motors to thyristors. Substantial savings of electrical energy will result from start-up of the high-capacity "FhLOU AVT" [automatic electric desalinization machine] planned for the current year. The oil refiners are bound by their socialist obligations to put this new installation into operation ahead of schedule. And this is far from all the possibilities.

12184

CSU: 1522

ENERGY CONSERVATION

MISUSE, WASTE OF GASOLINE CAUSES HIGH CONSUMPTION

Tallinn SOVETSKAYA ESTONIYA in Russian 8 Apr 80 p 2

[Article by V. Bogdanov: "Gasoline Left and Right"]

[Text] Observation: Automobile service stations (AZS) are usually "registered" at busy traffic intersections. Here one senses both the "dust of distant roads" and the atmosphere of quickly-formed acquaintanceships between drivers waiting in line for fuel. The AZS is an exchange center for driver information: What? Where? When? But is information the only thing being exchanged?

Here are two men who are making another kind of exchange: money for coupons--the same coupons issued to the driver to purchase fuel for a state vehicle. This is taking place in full view of other drivers, who, judging by their reaction, are not disturbed by this exchange or, more correctly, this illegal deal. We shall name the principal characters in this play: "merchant"--Ants Indre, driver for the "Vazar" association; "customer"--a certain L. Ehk; "goods"--60 liters of A-72 gasoline.

We make the following deduction. The gasoline was sold--therefore, there was an excess of gasoline available. But where would excess gasoline coupons in a state vehicle come from? From the enterprise's funds, naturally. The EaSSR Gonnafteinspekttsiya [State Petroleum Inspection Department] explained to me that fuel funds allocated to "Vazar" last year exceeded actual requirements of the association by 3,900 liters. Moreover, the inspectors had repeatedly pointed out to the association managers that speedometer logs were not being maintained (fuel is issued on the basis of these records), driver's trip logs were being filled out without due care and the numbers from issued fuel coupons were not being entered in these logs. So the drivers request gasoline coupons "by eye" and the association management continues to give them out "by eye," bothering only, simply stated, to fill in the blanks. During 6 months of last year 8.3 tons of gasoline was issued in this way.

Another address--the "Saku" brewery. Petroleum products are traded here left and right. In two years the brewery let a total of 3,000 liters of

gasoline go astray. However, the brewers are not alone in their trading "hobby." The list includes the Tallin bakery combine, the "Silikat" association, the Maardu chemical plant and others.

And this cornfield even has its own record holder--The Estonian Agricultural Academy. In only 8 months of last year the academy diverted 38,550 liters of gasoline. Of course, this did not go unpunished. The USSR State Committee for Supply of Petroleum Products imposed fines and reduced the academy's allocation by 65 tons.

And here is another tendency that is not hard to track. Ask the managers of a leading enterprise about their economic indicators. You will be given an exhaustive answer: sales volume is so much, the number of new articles is such and such, etc. But express an interest in their expenditures and conservation of fuel and you may offend somebody. That, they say, is a petty question.

The Tallin veneer furniture combine. Banners and prizes are commonplace here. But then take the combine's petroleum products storage facilities. You never hear a descriptive word here that is not preceded by "not." The storage area is not fenced, it is not equipped with fire-fighting equipment, there is not a sufficient number of measurement instruments, etc.

Moreover, I observed loaders being fueled with a bucket and a hand pump. And, of course, fuel is spilled. By the way, the combine's management is well aware of the spills and other deficiencies here. And they make calculations and estimates: it is too expensive to equip and mechanize the fuel storage yard. It is simpler to do the customary thing: that is to continue asking the ministry for the traditional extra allocation. The overage this year is 34 tons more than in 1979, even though the motor pool remains unchanged.

When I presented this information to the combine it drew an enthusiastic response from nobody--not from chief engineer N. Grigor'yev, not from supply chief, A. Dmitriyev, not from A. Shchennikov--the director. In the end I was closeted with assistant director M. Markovich, who was brilliant in leading the conversation away from this subject.

His explanation went like this. The chief of the transport department is a young fellow who is not in the know on how to articulate his case to the petroleum supply commission. How should the commission be convinced? He should try to impress upon them that raw materials do not always arrive as they should. Trucks must be sent out for the materials. And not just anywhere, but, let us say, to Vinnitsa for nails. We have to have 125 tons of nails each year, but we received only 30 tons. How then can over-use of gasoline be avoided?

M. Markovich's argument, obviously, cannot stand up to criticism. Here is one example. As it turned out, the trips he listed had been to distant

places, but all the rest had been within the republic. And another detail was characteristic. M. Markovich and the others I spoke with led the conversation to positive assertions--"we will work it out," "we will build," "we will liquidate."

And in actuality the combine is building a new fuel and lubricant storage yard. I examined it. But, honestly, I did not get the impression that the project was well-considered or advisable. A busy road passes directly alongside the walls of the storage yard. It is inevitable that when even a few vehicles are being fueled at one time a traffic jam will result. And in the fire-prevention sense it is not in the best location--next to a lacquer storage tank.

Let us now generalize the situation. Numerous indictments by the EoSSR Gosnefteinspektsiya sound the alarm. Planning, accounting, storage and rational use of petroleum products in many enterprises are today far from perfection. And these faults are typical both in their own manifestation and in the evaluation of the aforementioned instances. One does not feel a strict exactingness here. Often, after all, it is not the ministries that take away excess gasoline from the enterprises; it is the EoSSR State Committee for Supply of Petroleum Products. Why is this so? What is the position of fund custodians themselves on this issue?

N. Kireyenko, chief of the material funds section of the EoSSR Ministry of Local Industry, tells us.

"The 'Vazar' example is, alas, not an isolated case in our system. But what steps can we take? You see, the gasoline coupons are under the direct control of the production enterprises. Often the ministry is the last to learn of any machinations. In my opinion, the root of the evil is in the lack of exactingness on the part of enterprise managers. I cannot recall a case when they conducted an appropriate full-scale raid. It is customary for them to think that this is a concern of the petroleum inspection department and GAI [State Motor Vehicle Inspection Department]. I must admit that we, in turn, have grown accustomed to this practice. As a rule, we take action only on signals from outside organizations. For example, two tons of gasoline was withdrawn from the 'Vazar' association's fund. But then if the case of the coupons had not come up there would have been no sanctions at all."

"And still another important point," continues N. Kireyenko, "is that the enterprises are not concerned with creating an 'active' fuel economy; they strive to live within the limits of their allocations. And these limits, as a rule, are not based on calculated data. If we are to realize fuel economy, it will more likely come from initiatives of the EoSSR Gosplan. At the same time, even the funds that have been trimmed are overly generous. Evidence of this is the trading in gasoline coupons."

A. Verrev, chief of the material funds section of the EzSSR Minpiishcheprom (Ministry of the Food Industry), gives his opinion on the matter.

"The picture is much the same in our ministry. The petroleum inspectors issue citations after their checks. We demand explanations from the sites, we issue orders and we punish offenders. But, I must admit, we are not achieving the required effect. The enterprises find a thousand and one ways to justify their actions. And more. Effectiveness of monitoring by the ministry cannot be supplanted by some letter or directive. For this reason I think that it is advisable that we create a special monitoring group within the distribution and transport section of our ministry."

As you can see, the problem of the rational use of fuel resources is a very urgent one. It is appropriate here to cite the recent resolution of the CPSU Central Committee on the work of the Pavlodarskaya Oblast party organization in fulfilling the resolution of the CPSU Central Committee on economy of fuel and energy resources in enterprises and construction projects. The adopted resolution suggests, in particular, that organizational and indoctrinational work be made more objective and persistent, that monitoring of strict compliance with party and government decisions to increase fuel economy be made sterner and that managers react more sharply to instances of negligence in accounting, storage, planning and expenditure of fuel.

Work in this direction needs to be done in our republic as well. The chief of the material funds administration of EzSSR Gosplan, Kh. Ehler, commented on the situation.

"Expenditure, transportation and storage of fuel constitute a really critical question. Today it is difficult to name a branch of industry or an enterprise that is not striving to 'pump up' its annual limit, without consideration for the necessity to economize on fuel. But how it is used and how much of it goes astray--this seems not to worry the managers. It turns out that no matter how austere the funds are, they still result in an over-use of fuel, because the enterprises do not strive to live within strictly calculated norms."

And a word should be said here about the calculated norms. They are universal, calculated on a union level. However, many departments and enterprises prefer to "forget" about their existence and orient themselves to actual fuel usage. And behind this "actual usage" hides, as we know, an unrestricted ration of gasoline. This is especially true in regards to internal-use vehicles such as tractors and loaders. In this area we are an especially long way from clear-cut control over the use of fuel.

I would point out that the fuel-use norm, averaged over the Minavtozshosder (Ministry of Motor Transport and Highways), is 79.2 grams per kilometer-ton. In 1970 this index reached 104.5 grams. As we can see, there are grounds for hope. However, there is still a lot of internal potential for improvement. For example, bring the distribution of coupons into order. And, of course, we cannot agree that monitoring of gasoline usage should be left solely to the EzSSR Gaznefteinspektsiya and GAI. Both departmental and branch inspectors must make regular appearances at gas stations and fuel storage yards.

FUELS

FUTURE OF USSR FUEL-ENERGY COMPLEX OUTLINED

Moscow PLANOVoyE KIDZAYSTVO in Russian No 4, Apr 80 pp 87-94

[Article by L. Malent'yev, academician of the USSR Academy of Sciences, and prof A. Makarov, doctor of economic sciences: "Future Development of Fuel-Energy Complex"]

[Text] Since the end of the 50's up to recently the fuel-energy complex (TEK; toplovno-energeticheskiy kompleks) of the USSR has developed along the path of orientation to preferential use of high-quality types of fuel--oil and natural gas. Up to 80 percent of the growth in the national economy's demand for fuel was satisfied during this period by the indicated types of fuel, and with very low national economic outlays: the capital investments directed at an increase in the annual extraction came to (per 1 ton of standard fuel): 30-40 rubles for gas and 20-30 rubles for oil. Only the increase in coal extraction turned out to be expensive (up to 200 rubles per 1 ton of standard fuel as a result of the small absolute growth in its extraction with considerable outlays for maintaining the attained level.

The 20-year result of such an energy policy was the creation in the USSR of a mighty and complete fuel-energy complex, which not only occupies first place in the world with respect to total production of fuel and energy resources, but also has a number of structural advantages over the power engineering of industrially developed capitalist countries. The USSR, holding first place in the world for extraction of oil and second place for extraction of natural gas, at the same time remains the leader in world extraction of coal. In other words, accelerated enlistment of high-quality fuel in the balance has not been accompanied here with a reduction in the extraction of coal. There has taken place in the country a process of reorganization of the coal industry in the direction of all-possible development of open mining of coal in the eastern regions of the country, characteristic for which has been not only an overall increase in mining, but also an increase in the effectiveness of the coal industry.

Not only the sectorial structure, but also the territorial structure of the fuel-energy complex proved to be beneficial for development of the country's economy. Despite the fact that 90 percent of the potential

Fuel and power resources of the USSR are located in the eastern regions of the country, and up to 80 percent of the energy consumption falls to European regions, the last have almost wholly satisfied the demands with their own energy resources. In the last five-seven years the flow of fuel from the eastern regions into the European regions has begun to increase rapidly, and on the whole the last 20 year period is characterized by preferential development of the European fuel bases. The oil deposits of Bashkiria and Tataria, the gas deposits of the Volga region, the Northern Caucasus and the Ukraine were developed namely during this period. These fuel bases have provided the basic increase in the extraction of fuel and have served as the sources of an increase in the exports of fuel, the development of oil refining and the creation of a new sector of industry--the gas sector. And although over 20 billion rubles of targeted capital investments have been spent for it and 6-7 billion rubles have been directed to allied sectors of the national economy, the saving obtained (about 60 billion rubles in 15 years) has not only fully recompensed the outlays, but has also contributed to a sharp increase in the effectiveness of the fuel-energy complex and of the national economy as a whole.¹

The considered merits of the production structure of the fuel-energy complex are supplemented by important features of the country's energy system which determine the flexibility and efficiency (in comparison with other industrially developed countries) of our structure of energy consumption. Such features are the increased centralization of the system of heat supply (to the share of which fall up to one-third of the total fuel expenditure in the country) and, mainly, the mass-scale development of heating supply--the combined production of electrical and heat energy, yielding a great saving of fuel in comparison with their separate production at electric power plants and in boiler facilities. Besides a reduction in the expenditure of fuel, the heating supply system makes it possible to maneuver different types of fuel, which is especially important for the forthcoming reorganization of the fuel-energy complex.

Another special feature of energy use is the extensive development of public transport. It contributes to a significant saving of high-quality liquid fuel and increases the maneuverability of the fuel-energy complex, facilitating the transition from expensive liquid fuel to other energy resources through electrification of route haulings, including passenger transport.

Among the positive structural features of the USSR's fuel-energy complex are the extensive electrification of the national economy and the high concentration of production: 3-4 fuel depots in each sector provide the overwhelming extraction of the corresponding type of fuel.² Operating in the country are the world's largest electric power plants, gas and oil pipelines, oil refineries and open-pit coal mines.

An important role in increasing the effectiveness is played by centralization of the distribution of fuel and energy: 97.5 percent of the electric power produced falls to unified electric power engineering systems; the

Unified Gas System that is unique in scope supplies up to 99 percent of the natural gas; oil supply for the country's national economy is completely centralized.

Along with this there are substantial reserves for improving the fuel-energy complex of the USSR. With the high level of extraction of high-quality types of fuel the distribution of them among categories of consumers still does not fully meet the demands of national-economic effectiveness. Thus, at heat and electric power plants, which are the least demanding consumers regarding the quality of the fuel, at the present time more than half of the expended fuel consists of gas and masut. Among consumers which are the most sensitive to the quality of the fuel (small heating installations and household furnaces), only one-third of the utilized fuel is of high quality, and the rest is low-quality, including the so-called self-procurements of the public.

A substantial and often underestimated shortcoming of domestic power engineering is the presence of many small and very small boiler facilities. They have not only unwarrantedly high specific expenditures of fuel, but, which is now especially important, a large amount of manpower is necessary to service them: according to our estimates it is possible to release hundreds of thousands of people owing to centralization of the heating supply and removing small boilers from operation. Under the conditions of a shortage of labor resources, rationalization of the heating industry on the basis of construction of TETs [heat and electric power plants] and large boilers is an important reserve for increasing the effectiveness of socialist production. Created here at the same time are considerably more favorable conditions for solving the ecological problems which are arising in a number of cities, especially in Siberia.

Large reserves for increasing the effectiveness of the fuel-energy complex are also contained in fuel processing. Although the share of this stage of converting energy in the overall extraction of fuel here is high enough (all the consumable oil, and over four-fifths of the coal is processed; the processing of gas, including casing-head gas, is increasing) nevertheless the quality and assortment of the fuel produced, and also the depth of processing can be improved considerably. A shortage of high-grade coals for household users, as well as of good brands of coking coals, is being felt. The industry for oil refining is inadequately prepared for solution of the forthcoming problems. At the present time the yield of the most valuable light oil products at oil refineries comes to only about 45 percent.

The problem of processing arises in the gas industry as well. Here it is a matter, on the one hand, of removing from the gas sulfur and other components, which usually have a large independent value, and on the other hand it is a matter of processing the casing-head oil gas which not only will increase the resources of supply-line gas, but also yields the most valuable liquid fuel and chemical raw material. In addition, an important

problem is the development of gas-condensate deposits, with which is linked the problem of obtaining additional resources of hydrocarbons. As a whole the processing stage contains great reserves for producing additional resources, improving the quality of the fuel offered to the consumers.

Also contained in improving the energy system for the consumers are large reserves of a saving of energy resources and reduction of outlays for the energy supply of the national economy, including owing to reduction in the use of the most critical liquid fuel. At the present time the energy system of the consumers (especially of operating enterprises) often functions as an auxiliary part of production. As a result in the basic energy-consuming sectors--metallurgy, machine building, the chemical industry--there is a large proportion of obsolescent and physically worn out power engineering equipment, and the capital investments in its development and reconstruction constitute less than half of the necessary investments. In our opinion, for a radical reorganization of the energy system for the consumers it is necessary to improve the system of planning and financing measures for a saving of fuel and energy.

In the 11th and 12th five-year plans the main conditions for development of the fuel-energy complex will be changed substantially. Thus, there will be a reduction in the resource base of power engineering, not so much in connection with the smaller level of availability of prospected reserves of fuel (with our potential reserves right up to the beginning or the middle of the 21st century the level of their industrial development will depend only on the volume of means set aside for prospecting), as due to the worsening of their placement and, mainly, the geological conditions of occurrence of the beds. Moreover there will be an increase in the withdrawal of operating capacities for extraction of different types of fuel, especially of oil and coal. As a result the outlays for an increase in the extraction of gas and oil will increase several-fold by comparison with the previous 20-year period.

Another feature of the coming period is the growing cost of oil on the world market and, as a consequence, the increase in prices on other energy resources. This will increase relatively the effectiveness of exporting fuel, although the conditions of the world market, in our view, will not have a direct influence on the development of our power engineering.

A rise in the capital-intensiveness of fuel extraction in the future will be combined with a growth in the capital-intensiveness of fuel processing (as a result of the increase in its depth and the worsening in a number of cases of the quality of the fuel to be processed) and the production of electrical and heat energy. The latter is brought about by the transition to the use of capital-intensive atomic energy for the production of electrical and heat energy. As a result, in order to obtain in the country these increases in the production of fuel and converted types of energy under the new conditions considerably larger capital investments are required than in the preceding period.

The factors enumerated above are manifested far from identically in the various units of the fuel-energy complex. They operate especially strongly in the oil industry and more weakly in the coal industry. However the development of the latter in the near future will be held back more and more by the limited carrying capacity of the railroads, especially those joining Siberia and the European regions of the country.

Taking into account the worsening of the conditions of development of the fuel-energy complex there arises the difficult task of reorganizing the structure of consumption of fuel-energy resources and a corresponding large-scale rebuilding of the energy system of the consumers. The priority stage in its solution should be a complex of measures for a saving of oil products, for instance, the replacement of masut with natural gas.

Necessary under modern conditions is a complex approach to development of power engineering, combining in-depth analysis of long-term objective tendencies of its development with systematic study of their concrete quantitative manifestations at the next stage.

One of the most important tendencies in the development of power engineering is the high stability of the expenditure of terminal energy³ calculating per unit of national income. The given tendency, confirmed by the development in the last two decades of power engineering in the USSR and in other countries, apparently, characterizes modern productive forces, and their sectorial structure. It is very difficult to change existing relationships and, as a rule, much time is required for this.

For instance, among the most well-known ways of saving terminal energy and, consequently, of reducing its expenditure per unit of national income, is the reduction in the expenditure of heat for heating buildings owing to improvement of their heat insulation, particularly by increasing the thickness of the walls. However in this case there is an increase in the expenditure of building materials, for the production of which additional energy is required. As a result at the first stage in fulfillment of the indicated measure the overall expenditure of energy not only cannot be reduced, but will even increase and only subsequently will the measures taken begin to yield a saving. It seems that before the end of the 20th century it is difficult to expect a marked reduction in the expenditure of terminal energy per unit of national income. Apparently, per 1,000 rubles it will come to 9-11 Gcal (depending on the calculation method) against 10-11.5 Gcal in the past 20-year period.

Another tendency in the modern stage of development of power engineering pertains to the structure of energy carriers and is conditioned by the constant growth in the share of converted types of energy in meeting the demands and of terminal energy. This is caused by the systematic increase in the share of electric energy with attenuating growth (with subsequent stabilization) in the share of steam and hot water in the consumption of terminal energy. As a result, expected in the future is a rise in the

electrical capacity in the production of the national income with a certain increase in the heat capacity, with its subsequent stabilization at the level of 5-6 Gcal per thousand rubles. As a result the share of the direct expenditure of fuel in production of terminal energy will be reduced rapidly.

The general directions of scientific and technical progress--the concentration of production and centralisation of the distribution of energy--will be embodied at the forthcoming stage in the further concentration of efforts on development of the largest fuel bases (such as the Western Siberian oil and gas province, the Donets and Kuznetsk coal basins and others); in the creation of very large fuel-energy complexes (the Kansk-Achinsk coal-energy complex, the Ekibastuz complex and others) and super-capacity gas fields; and in raising the annual capacity of units and enterprises (for coal pits--up to 60 million tons of coal, for oil refineries--up to 25-30 million tons of oil, for electric power plants and their units--respectively up to 6 million and 1.5-2 million kilowatts of electric power, and so on).⁴ All this will lead to the formation of unique systems of power engineering (Unified Electric Power Engineering System, Unified System of Gas Supply, and others), covering a large part of the territory of the country and being created on the basis of the latest means of transport: ultra-high voltage electric power transmission lines (1150 kilovolts of alternating current, up to 2200 kilovolts of direct current with a capacity of up to 40 million kilowatts), and large-diameter gas, oil and product pipelines.

In the forthcoming period the task raised by the 25th CPSU Congress should be realized regarding reorganizing the structure of the fuel-energy complex in the direction of stabilization of the share of individual types of fuel, and, in the future, in the direction of reducing their share in the overall production of energy resources, as is shown in table 1. The reorganization will begin with a reduction in the share of oil as a result of the slow growth or even the stabilization of absolute levels of its extraction. This should be compensated by accelerated use of nuclear fuel and coal, by growth in the extraction of natural gas. Analysis of the fuel regimes of consumers of various categories has shown that in the next 5-8 years petroleum fuel can be replaced practically only by natural gas, and in the subsequent period nuclear fuel and coal will be able to play an ever-increasing role.

With a stabilizing and then a falling share of hydrocarbon fuel a further qualitative improvement in the production structure of the fuel-energy complex will be attained owing to an increase in the use of atomic power. In this case it should be realized not only as a result of the use of it for production of electric power, but to a significant degree (and by the end of the 20th century an overwhelming one) by way of its introduction in the sphere of heat supply.

Table 1.

(in %)

Fuel-energy resources	Dynamics of the structure of the fuel-energy balance of the USSR by years		
	1970	1975	1980
Oil and condensate	38	43	43
Natural gas	18	21	25
Total hydrocarbon fuel	56	64	68
Coal	35	30	25
Nuclear energy	--	--	1
Hydroenergy	3	2	3
Others	6	4	3

To a certain degree the reduction in the proportion of oil and gas in the country's fuel-energy balance will be compensated by coal, the share of which after prolonged stabilization at the level of 22-23 percent, apparently, will increase. In addition to the extensive use of coal at electric power plants in eastern regions of the country (including owing to displacement there of energy-intensive production facilities) and the organization of massive overcurrents of electric power along the direct current electric power line to European regions of the country, the growth in the share of coal in the future will be furthered by the organization of its mass processing with the aim of producing artificial liquid fuel capable of replacing light oil products.

The data in table 1 shown that in the course of the considered period the share of other types of fuel (peat, shale, firewood and so on) is being reduced. Despite all the efforts with respect to development of hydraulic power engineering, the share of hydroelectric power plants in the total production of energy resources is kept in the limits of 2-3 percent.

The considered changes in the structure of the fuel-energy complex are accompanied by shifts in its territorial placement. The essence of this tendency consists in that beginning with the 10th Five-Year Plan the whole increase in the production of fossil fuel in the country falls basically to the eastern regions. In the future it will be necessary, to a significant degree owing to these regions, to compensate the reduction in the extraction of oil and gas in the European regions. The coming period will be characterized by a rapid increase in the flow of fuel and energy to the European regions of the country, mainly from Siberia. This many-fold increase will begin to slow down only toward the end of the 20th century, when nuclear power engineering will be able to take on, besides the basic increase in the size of the electrical load, also a large share of the

Table 2.

(in kopecks/kilowatt-hour)

	Nuclear power plants	Adduced expenditures for electric supply of electric power plants using		
		Ekibastuz coal with direct current elec. power line	Kansk-Achinsk coal with direct current electric power line	Kuznetsk coal (in region of consumption)
Central region	1.3-1.5	0.95-1.1	1.15-1.25	1.55
Ural	1.35-1.55			1.20
Siberia	1.45-1.65		0.65-0.75	
Kazakhstan		0.55-0.65		

increase in fuel for centralized heating supply. And nevertheless oil- and gas-pipelines will remain to the end of the century the basic route for fuel supply for the European regions of the country.

The main directions of technical policy in the field of electrical and heat supply, in our opinion, consist in the following.

In the European regions of the USSR the basic type of base GRES [state regional electric power plant] will be atomic condensation electric power plants (AKES; atomnyye kondensatsionnyye elektrostantsii). It is expedient also to provide the supply of the indicated regions with electric power from the Ekibastuz and so forth, from the Kansk-Achinsk fuel-energy complex, by means of erecting high-capacity direct current electric power lines, data about which are presented in table 2. The first of these, as a necessary stage in development of high-capacity direct current electrical transmissions with super-high voltage (2200-2500 kilovolts) should be the Ekibastuz-Center (Tambov) electric power line with a voltage of 1500 kilovolts and a carrying capacity of about 40 billion kilowatt-hours. Namely the combination of building atomic condensation electric power plants and direct current electric power lines from the eastern regions will make it possible to impart stability to the country's Unified Electric Power Engineering System. At the same time, for the Urals it is possible to be oriented basically to electric power transmitted from Siberia, and also to Kuznetsk coal, and for Siberia to be oriented to Kansk-Achinsk coal and hydroenergy (as is evident from table 2).

Centralization of heating supply is a great reserve for a saving of labor, fuel and metal. It is obvious that in Siberia, where coal predominates which it is efficient to burn in large energy installations, central heating remains the basis of centralized heating supply. In the European regions of the USSR, where a significant part of the required increase in electrical capacities will be provided by the erection of atomic condensate electric

Table 3.

(in thousand rubles)

Type of fuel	Adduced expenditures per 1 Gcal of heat energy per hour (with heating loads above 1500 Gcal/hr)		
	At TETs		At AKES in combination with boilers operating on fossil fuel
	Nuclear	Operating on fossil fuel	
Gas (cost of 1 ton of standard fuel, 30 rubles)	40-42	44	46-49
Coal (cost of 1 ton of standard fuel, 30 rubles)	42-44	48	50-52

power plants, there arises the question of the advisable scales of development of heat and electric power plants, operating on fossil fuel. As is shown in table 3, most economical is the centralized heating supply of these region from nuclear heat and electric power plants and boiler facilities. However, in view of the necessity of a certain time period for their development in the coming period it is necessary to provide the basic increase in the heat load using fossil fuel. Under these conditions it is most expedient to be oriented to the building of heat and electric power plants using fossil fuel, and not a separate scheme of energy supply.

For concentrated heat loads (1500 Gcal/hour and higher) it is advisable to build large TETs using fossil fuel (in large cities, using gas), the more so that this is a reliable guarantee of insuring the optimum centralized heat supply. Practical experience gives evidence of the great difficulties in cooperative organization of the means of the consumers for building large boiler facilities with a productivity of 300 Gcal per hour and higher. The building of small boiler facilities, even those operating on gas, is a great detriment. With heating loads less than 1500 Gcal per hour it is advisable to build boilers as large as possible, operating on fossil fuel (mainly on gas), and nuclear ones.

Maneuverability is the most important condition for reliable supply of electric power to the consumers. A number of careful work-ups show that along with the water-storage electric power plants (GAES), intended for acute peak loads, it is necessary in every way to speed up the creation of special semi-peak equipment, operating on solid, and then on artificial liquid fuel, as well as the creation of peak gas-turbine units (GTU) with compressed air storage, operating at first on liquid fuel, and then on gas (when the capacity of the underground gas storage facilities increases the maneuverability of the Unified Gas Supply System to the necessary level). Obviously, it is not efficient to disregard world experience in the extensive use of special semi-peak equipment and peak gas-turbine units and to try

to provide flexible electrical supply only owing to the creation of GAES (in the lowland conditions of European regions of the country), owing to prolonged operation of worn-out equipment at pre-critical parameters of steam and a manageable operating regime of the blocks at supercritical parameters of steam. Such a regime will inevitably lead to accelerated technical wear of the equipment and, consequently, sharply rising expenditures for its repair and modernization.

Implementation of the above-considered directions of development of the USSR fuel-energy complex will make it possible to insure complete, more reliable and high-quality satisfaction of the needs of the national economy for fuel and energy. By the end of the century the level of electrification of the national economy will be increased by approximately one-third, and the share of centralized heating supply will almost double. Motors and mechanisms, technological and household consumers, and also the majority of sources of heat in large cities will be provided with high-quality types of fuel. However it is possible to achieve balanced and effective development of the fuel-energy complex only as a result of great efforts for reorganizing its structure and the whole system of energy supply to the consumers. This requires capital investments, apparently, two-fold greater than under the former conditions of development of power engineering. As studies have shown, it would be incorrect to seek a saving of capital investments by way of holding back the development of the fuel-energy complex, since this would be a proportional reduction in the rates of economic growth. The main way of increasing the effectiveness of the fuel-energy complex is through an intensive energy-saving policy, supplemented by acceleration of scientific and technical progress in the production, distribution and utilization of energy.

Footnotes

1. See: A.A. Makarov, A.G. Vigdorchik, "Toplivno-energeticheskiy kompleks" [Fuel-Energy Complex], Moscow, "Nauka", 1979, p 139.
2. A.A. Makarov, A.G. Vigdorchik, "Toplivno-energeticheskiy kompleks", p 148.
3. Called terminal is the energy that is directly expended in technological, household and transport processes and is dictated by their physical nature. Terminal energy should not be confused with energy carriers, using which the energy is brought to the consumers and among which are included electric power, steam and hot water, liquid, gaseous and solid fuel, compressed air and so on.
4. A.A. Makarov, A.G. Vigdorchik, "Toplivno-energeticheskiy kompleks", pp 132, 145.

COPYRIGHT: Izdatel'stvo "Ekonomika", "Plannoye khozyaystvo", 1980

10908
CSO: 1822

PROGRESS TO DATE, GOALS OF OIL INDUSTRY DESCRIBED

Moscow NEFTYANIK in Russian No 4, Apr 80 pp 6-9

[Article by V. Kromnev, First Deputy Minister of the Oil Industry: "In the Main Directions"]

[Text] The Soviet country has entered the fifth and final year of the 10th Five-Year Plan. This year must become the starting platform for the next, 11th Five-Year Plan, the year of active preparation for the 26th CPSU Congress.

In fulfilling the decisions of the 25th CPSU Congress the Soviet country significantly advanced in the development of the national economy, and the further elevation of the welfare of the workers. In the four years the national income rose by 16.2%, or by 323 billion rubles as compared to the corresponding period of the Ninth Five-Year Plan. The main production funds exceeded 81 trillion, the capital investments--8500 billion. The increase in gross agricultural products reached 8.8%.

It was noted at the November (1979) Plenum of the CPSU Central Committee that the oil industry is one of the base branches of the national economy. During 1976-1979 the oil workers increased oil extraction and gas condensate extraction by 94 million T. The entire increase in extraction was obtained at the oil fields of the Ministry of the Oil Industry. On the whole during these years over 2 billion T of oil and gas condensate and over 200 billion cubic meters of gas were extracted at the enterprises of the branch, main oil pipelines of total length about 11,000 kilometers were put into operation, 100 oil pumping stations, reservoirs for collecting oil and gas with total volume 2.8 million cubic meters, gas refineries for refining 8 billion cubic meters of oil gas, and a number of other production facilities.

The advances in the branch in the increase in extraction of oil and gas were guaranteed to a considerable measure by the leading growth in drilling operations. Whereas in 1975 the volume of field drilling for the Ministry of the Oil Industry was 8.6 million meters, in 1979 almost 13 million meters of wells were drilled. The volumes of drilling operations rose especially

in West Siberia and the Komi ASSR, in the regions with severe natural and climate conditions. Systematic work also continued to improve the use of oil gas. The introduction of new facilities for gas refining permitted the level of its use to be raised from 57.8% in 1975 to 70.8% in 1979, including from 17 to 51% in West Siberia.

In addition to solving questions of production nature a lot of attention was given to improving the residential-general conditions, and increasing the medical and cultural servicing of the branch toilers. In 1976-1979 more than 3.6 million square meters of living area were introduced in the branch, kindergartens were built for 20,800 places, schools for almost 30,000 places, hospitals for 1500 beds and polyclinics for 9,300 visits per shift, and clubs for 3150 places. A total of over 8.1 billion was directed for this construction during the 4 years.

In 1980, the final year of the 10th Five-Year Plan, in order to fulfill the established assignments, the collective of oil workers is faced with intensive work. It is necessary to guarantee extraction of 584.9 million tons of oil and gas condensate, including 4 million tons for an additional assignment, and gas extraction in a volume of 52 billion cubic meters. It remains to drill about 17.0 million meters of producing wells, 4.0 million meters more than in 1979; to assimilate 6.8 billion rubles of capital investments, including 2.7 billion rubles of construction-installation work. And today the task consists of making detailed analyses of the causes for the shortcomings in our work, and in light of the decisions of the November (1979) Plenum of the CPSU Central Committee, conclusions and conditions contained in the speech at this Plenum of the General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev, to plan and implement measures for an improvement in the activity of all the subdivisions of the Ministry, increase in the efficiency and quality of all our work, and to concentrate efforts on key sections that guarantee solution to the problems of developing the oil industry.

It is known that the oil industry in such regions, as the Urals-Volga region, North Caucasus, Ukraine, Azerbaijan and Belorussia have entered a qualitatively new period of development. An ever greater number of fields here are being used in the late stage of development, characterized by a drop in extraction of oil and intensive flooding of the well products. In addition, in West Siberia, Kazakhstan, Turkmenia fields are being developed that are complex in geological structure and unusual properties of the oil, such as Buztler, Var'yeganskiy, Uzen', Kotur-Tepo, Barsa-Gel'mes and others. Under these conditions the role and importance of an engineering approach to questions of field development rise, and the perfection of the extant, creation and introduction of new, more advanced methods of development that guarantee more complete use of the oil from the depths, as well as the strictest observance of the technological regulations for field operation acquire special importance.

Among the primary geological and technical measures for perfection of development one should include those such as broad introduction of selective, focal and cyclic flooding, and flooding with a change in the direction of the filter streams in order to involve in the development bypass and stagnant zones of the Romashkinskiy, Tuymazy, Shkapovskiy, Uzen' and other fields. At the fields that have entered the late stage of development, forced recovery of liquid will be introduced, and at the fields with highly viscous oil--thermal methods of bed modification.

Wells comprise the greater part of the main branch funds. It is quite understandable that the more efficiently they are used, the more successfully set planned tasks for oil and gas extraction will be fulfilled.

According to the state of affairs on 1 January 1980 the fund of producer wells reached 77,200 units, including 74,500 units that are active and produce. The fund of inactive oil wells on the whole for the branch in the past 4 years of the five-year plan dropped slowly--from 3 to 2.7%, despite the fact that the collectives of such associations as "Tatneft" and "Azneft" achieved good results. At the same time in the association "Turkmenneft" the fund of inactive wells was increased from 2.8 to 4.2%, and in the association "Mangyshlakneft"--from 3.6 to 5.3%. There are two main reasons for the standing of many wells: the still unsatisfactory quality of the construction of a number of wells, and the insufficient supply of brigades of major repair of wells for the fields. The task is to reduce the fund of inactive wells to the minimum.

A special place in oil extraction belongs to the mechanized method, and among the mechanized wells, those that have operating deep-well centrifugal electric pumps (UETsN). Precisely the UETsN provide 65% of the oil extraction by the mechanized method. Work has been well organized for the operation of electrical submerison equipment in the association "Tatneft", which has the largest fund of wells with UETsN and some of the branch's best main indices of their operation: the inter-repair period reaches 320 days, while the coefficient of operation of the active well fund is 0.956. Good operating indices of the UETsN have also been attained in the association "Bashneft" and Kuybyshevneft'. But this work has been poorly organized in the association "Komiyeft" and especially in the Glavtyumenneftegaz. These subdivisions, like the collectives of all the other associations should persistently fulfill measures necessary for increase in the inter-repair period of operation of UETsN-equipped wells. A common shortcoming of the UETsN operation in all the branch associations is the unsatisfactory adjustment of the protection for the control stations. This phenomenon cannot be acknowledged as normal, and this year the associations need to adopt all measures that depend on them to eliminate this shortcoming, and permit only specially trained personnel to service the control stations.

There are considerable reserves for increasing the inter-repair period in the fund of wells equipped with sucker rod pumps. In this first place this is an increase in the level of engineering work on the well fund, and the

correct selection of deep-well equipment, columns of pipes and rods. Analysis demonstrates that every fifth underground repair of deep-pump wells has to be made due to ruptures and loosening of the rods. This is linked to the fact that in the majority of associations there is no consideration for the operating time of each column of rods and pipes. In the association "Bashneft" there is organized accounting for the operating time of the rods and their efficient selection which have permitted a reduction in the number of rod ruptures per well from 1.7 in 1966 to 0.31 in 1979, which has significantly increased the inter-repair period of well operation.

The increase in the inter-repair period of well operation depends to a considerable degree on the organization of services for well repair. During the years of the current five-year plan the capacity of this service on the whole for the branch rose by 23% brigades, which permitted a reduction in the repair frequency from 3.6 to 3.2 for one well per year, although in this same period the well fund rose by 14,000 units.

However, in the associations "Grozneft'," "Dzhebkeft'," and "Embaneft" the frequency of repairs is still high, and in the associations "Nizhnevolskneft'," "Komi-neft'," "Krasnodarneftegaz," and "Azneft" the shift work of the underground repair brigades is low, which results in standstills of the wells and losses of oil extraction.

There is yet another serious shortcoming that has a negative effect on the operation of the wells, namely, the unsatisfactory quality of the underground repairs in a number of associations. Thus, in the Glavtyumenneftegaz and the association "Kuybyshevneft" repeat repairs comprise about 7% of their total number. Their percentage is great in the associations "Permneft'," "Orenburgneft'," "Tomskneft'," and "Ukrneft'."

Taking into consideration that the standstill of a well is a direct loss of oil extraction, the collectives of the associations where well repairs are frequent, shift work of the underground repair brigades is low, and the repeat repairs are frequent are faced with seriously analyzing the reasons leading to such a situation, and significantly improving the quality of repairs.

As already noted, in the 4 years of the current five-year plan the use of oil gas resources noticeably rose on the whole for the Ministry of the Oil Industry. The highest indices for oil gas use were in the associations "Azneft'"--97% and "Krasnodarneftegaz"--94%; this work is done well in the associations "Grozneft'," "Kuybyshevneft" and "Tatneft'." Oil gas is still poorly utilized in the associations "Embaneft'"--10%, "Komi-neft'"--41.2%, as well as Glavtyumenneftegaz--50.6%.

Improved use of oil gas, especially in the Komi ASSR and Tyumenskaya oblast, depends a lot on the activity of the enterprises of the all-union production association "Soyuzneftegazpererabotka." This year the Uainsk GPZ [gas refinery] with compressor station in the Komi ASSR was put into industrial

operation; it remains to develop Nizhnevartovsk GPZ No 4, complete construction on and put into operation the Yuzhno-Balykss, Belozernyy and Surgut GPZ, and the Lobanovskiy compressor station in the Tyumenskaya oblast. This will permit the oil gas use in 1980 to be brought to 76% on the whole for the branch.

One of the most important trends in the activity of the production associations of the Ministry is the precise organization of drilling operations. Drilling of wells and their putting into operation is the creation of new oil extracting facilities. Therefore a lot of attention is given to the development of drilling work, in the first place, in the regions that guarantee the main increases in oil extraction and determine the development of the branch. The planned assignments for the volume of operational drilling in 1980 for the branch have been set at 4 million meters more than in 1979.

A considerable increase in the volumes of well tunneling is envisaged for the Glavyumenneftegaz and the associations "Komiyeft'," "Mangyshlakneft" and "Embaneft'." Here the responsible task of fulfilling the planned assignments for drilling in the Tyumenskaya oblast is placed on the drilling organizations of the associations "Tatneft'," "Bashneft'," "Kuybyshevneft'," "Saratovneftegaz," and "Belorusneft'" that work in West Siberia by the watch-expedition method.

It needs to be stressed that the assignment for the volume of drilling work for 1980 is very intensive. It can only be fulfilled with the use of all available reserves, and strict observance of the planned, technological and labor discipline. It is required that a considerable improvement be made in the organization of drilling operations, the rates of technical progress increased, and the growth in labor productivity sharply improved. Special attention needs to be given to an increase in the quality of well construction, to reduction in flaws in the work of the drilling brigades, and shortening of the time for testing, installation of pipes in wells and their putting into operation.

In 1979 the Ministry of the Oil Industry obtained geological data confirming the correct selection of the chief trends in the geological-exploratory work, and permitting expansion in the search for new fields in a number of oil extracting regions of the country. Among the discoveries that have fundamental importance for pinpointing the outlook of the oil and gas presence in individual regions one should include the discoveries in the Volgogradskaya oblast, Hashkiriya, Checheno-Ingushetiya, Stavropol'skiy kray, Pritbilisakiy rayon of Georgia, Tadzhikistan, Embinskiy rayon, Saratovskaya oblast, Azerbaijan and Turkmenia. All of this indicates the need for a persistent search for new fields in the "old" oil extracting regions.

However, the effectiveness of geological-exploratory work in the branch still remains low, the scientific substantiation of their directions is insufficient, and well tests are not always conducted in time and with quality.

Serious tanks have been set for the explorers in 1980. Primarily it will be necessary to more efficiently and with more scientific substantiation arrange the search and exploratory drilling and the capital investments allocated for searching for oil and gas fields. Here the efficiency of the geological-exploration work must be considerably increased, both by means of a quality preparation of the structures, and by means of improving the well testing. We note that searches for oil and gas fields will be made in accordance with the developed complex plans of geological-exploratory work in the regions of the Urals and the Volga, in West Siberia, Turkmenia and Kazakhstan.

A lot of attention at the November (1979) Plenum of the CPSU Central Committee was focused on such a major state problem as capital construction. For our branch the putting into operation of objects in the planned periods has the most importance in the attainment of final results for the guarantee of oil and gas extraction. Although in the 4 years of the 10th Five-Year Plan certain advances were made, the situation in capital construction cannot satisfy us.

In 1979 the plan of capital investments was only fulfilled by 92%, and construction-installation work even less--85%. Construction of 1,744 kilometers of oil pipelines was not finished, 15 oil pumping stations, 1.03 million cubic meters of reservoir tanks, 454 kilometers of gas pipelines, 4.0 billion cubic meters per year of new facilities for gas refining and a number of other facilities. A considerable lagging was permitted in the construction of the nonproduction facilities. Four hundred thousand square meters of living area were not put into operation, and of them about 300,000 square meters were in West Siberia. The assignments for the construction of children's preschool institutions and hospitals were not completely fulfilled.

The main reason for the nonfulfillment of the plans for capital construction is the unsatisfactory work on the facilities of the oil industry by the building organizations of the contract ministries. However, the customer enterprises are still not doing everything for the successful fulfillment of the assignments. There are still cases of untimely issuing of technical documents to the contractors, delivery of unplanned equipment, untimely allocation of lands and completion of areas and routes. One cannot tolerate this, the more so since the program of work for capital construction in 1980 is greatly increased. Thus, the volume of capital investments is 19% greater than in 1979, the construction-installation work is 31% higher; the volumes of work fulfilled by the in-house construction organizations will rise by 22%, and 60% of the work remains to be done in West Siberia, at Mangyshlak, in the Perm'skaya oblast and the Komi ASSR.

In order for this program to be successfully realized it is necessary to concentrate at the start-up construction sites the forces and resources to guarantee their timely putting into operation, and to sharply raise the role of the customer as the organizer of this process. It is necessary to

raise the personal responsibility of each worker participating in the construction, and to increase the demand by the executors for timely and high quality fulfillment of the missions.

The question of fulfillment of plans for construction of nonproduction objects is especially acute. This primarily concerns West Siberia, where the production advances depend on how much the oil workers are provided with housing, kindergartens, schools, hospitals and cultural-general facilities.

The enterprises and organizations of our branch are doing a lot of work to introduce new equipment and leading technology provided for by the national economical plan and the plan of the ministry. Over 1100 technical, technological and other developments of the scientific research and planning institutes are annually introduced. However, the efficient work of different institutes and design offices is not the same.

Highly-efficient developments in the field of automated units of varying purpose have been made by the institutes "Giprovestokneft'," "Giprotyumenneftegaz," "Giprotruboproved" and "VNIIGazpererabotka," and in the field of seismic stations, the Saratov Special Design Office of Seismic Equipment. A lot of good developments have been made by the institutes VNIISPTneft' [expansion unknown], VNIIBT [All-Union Order of the Red Banner of Labor Scientific Research Institute of Drilling Equipment], VNIIDRneft' [expansion unknown], TatNIPneft' [Tatar State Scientific Research and Planning Institute of the Oil Industry], and BashNIPneft' [Bashkir State Scientific Research and Planning Institute]. At the same time we have to speak of the still weak scientific and organizational activity of the main all-union scientific research institutes and VNIIBT who do not make full use of their potentialities in solving questions of increasing oil output and chemization of the oil industry, as well as the scientific-production associations "Soyuzterrneft'" and "Soyuzneftekhimprom."

The plan for introduction of new equipment is not always fulfilled on time, for which the ministry is justly criticized in the periodicals. On the one hand, this is a result of the insufficient attention of the leaders in the associations and institutes of the Ministry of the Oil Industry to the development of technical progress and the technical base of the branch, and on the other hand, the poor consideration by the ministry administrations for the real potentialities of fulfilling the plans both in volumes and in the periods when they form these plans.

It remains in the current year to develop extended programs to solve the most important scientific and technical problems in the 11th Five-Year Plan, to match them with the related ministries and departments, and to approve them in the USSR State Committee for Science and Technology. The same work will be carried out for the formation of plans to introduce new equipment and the leading technology, and to master new types of industrial products. Our success in the 11th Five-Year Plan will depend a lot on the quality of its fulfillment.

The personnel occupies an important place in increasing the efficiency and quality of our work. In our branch there are almost 200,000 certified specialists, including 78,000 with higher education. Nevertheless, still more than 19% of the engineering positions are occupied by skilled workers while certified specialists are filling the worker positions. Reserves of personnel for advance have not been set up in all the associations and enterprises.

The task consists of correctly placing the oil specialists with regard for their training, work experience and personal qualities. It is necessary to more boldly advance to the supervisory and engineering work the most capable young specialists, and work to create personnel reserves for promotion must be in the center of attention of leaders of all levels. Under conditions of a constant perfection in equipment, technology and production control, and an increase in the requirements for the personnel it is necessary to continually work for the certification of the supervisory workers and specialists in the branch, and increase in their qualification.

An important role in the advances made in the branch belongs to the leading workers of production and the leading collectives. They are directly linked to the extensive organizational work to develop socialist competition for an improvement in the efficiency of production and quality of work.

Many collectives of our production associations have worked successfully in the last 4 years, and have fulfilled the state plan and adopted socialist commitments

Socialist competition in all the collectives and organizations for the worthy meeting of the 110th anniversary of the birth of V. I. Lenin has unfolded widely in a situation of high activity and mass enthusiasm in the branch. The motto of the leading collectives is "Fulfill the assignment of the five-year plan by 22 April 1980." This initiative has been supported by the leading collectives of the brigades in the leading professions of all the associations and enterprises in the branch. Dozens of drilling and derrick-installation brigades, brigades of major and underground repair of wells have already reported the fulfillment of the five-year plan assignments.

In the beginning of this year the collectives of the associations, enterprises and organizations of the branch attentively analyzed their potentialities and adopted for 1980 socialist commitments that were generalized and on 17 January approved at the enlarged board of the Ministry of the Oil Industry. Now the task of all the leaders in the branch enterprises is to mobilize all efforts towards their early fulfillment.

The competition, as Comrade L. I. Brezhnev noted at the November (1979) Plenum of the CPSU Central Committee, must be oriented on quality indices, and the struggle to fulfill the oncoming plans. It needs to be reinforced

by all possible support and spread of the leading experience, leading forms and methods of work that promote an improvement in labor productivity.

The plan for 1980 and its fulfillment are an important link in the realization of the decisions of the 25th Party Congress.

COPYRIGHT: Izdatel'stvo "Nedra", "Neftyanik", 1980

9035

CNO: 1822

PROBLEMS OF IMPROVING PERSONNEL WORK

Moscow STROITEL'STVO TRUBOPROVODOV in Russian No 2, Feb 80 pp 2-6

[Article by A. P. Vesel'yev, Deputy Minister of Construction of Enterprises of the Petroleum and Gas Industry Enterprises]

[Text] The key sections at the modern stage of development of our economy include the basic sectors of industry--the fuel energy complex, metallurgy and machine building. This was emphasized with special force by the November (1979) Plenary Session of the CPSU Central Committee. The advanced development of basic sectors of industry permits creation of a strong foundation for new success of Soviet economics according to the decisions of the 25th CPSU Congress.

The collectives of the enterprises and organizations of Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] are making an important contribution to development of the fuel energy complex, which is the most important constituent part of the basic sectors of industry.

The achievements of the sector are determined to a significant degree by the level of personnel work--management, engineering and technical and workers.

All subdivisions of the sector are staffed mainly by managers and specialists having the necessary training and experience. A combination of young capable and mature cadres is provided.

The number of engineering and technical personnel (ITR) with higher and secondary specialized education has increased by more than 7,000 persons since the beginning of the five-year plan and the specific weight of trainees among ITR has been reduced. All chiefs, the chief engineers of main administrative boards and associations and 80 percent of trust managers now have higher education.

The qualitative composition of chiefs and chief engineers of construction administrations is being improved and 98 percent of them are specialists with diplomas.

A great deal of attention is being devoted to selection of middle- and low-level personnel. The number of engineers in charge has increased by almost 600 persons in organizations of the sector during four years of the five-year plan. The number of foremen increased by more than 600 persons, there were eight percent more foremen with higher education, 300 persons completed secondary specialized education and the fraction of trainees among them was reduced by more than seven percent.

Improvement of the qualitative composition of managers and engineering and technical personnel is a direct consequence that the personnel services of organizations and enterprises of the ministry began to think more and to solve problems of selection and placement of personnel with greater responsibility. Local party organizations gave significant assistance to them in this matter.

At the same time there are still many deficiencies in personnel work and it does not fully correspond to the requirements of the 25th Party Congress and the November (1979) Plenary Session of the CPSU Central Committee.

A significant number of unfilled positions remains in the organizations of the ministry. An especially unfavorable situation has developed in organizations of Glavtruboprovodstroy [Main Administration for Pipeline Construction].

The qualifications of workers require further improvement. Although, as noted, the specific weight of specialists with diplomas in the total composition of ITR increased during the years of the 10th Five-Year Plan, the specific weight of trainees was reduced but the number of trainees is still high and comprises 19.5 percent. At the same time only one-fifth of them are studying at vuzen and technical schools.

The problem of personnel management and creation of a situation favorable for the skills of workers to be manifested is of principal significance. Specialists can be shifted only when this is in the interests of things and the necessity to strengthen one or another operating sections.

Personnel stability has a positive effect on the level of managing and organization's activity. However, it would be a serious mistake to leave those who cannot cope with matters in responsible positions.

Comrade L. I. Brezhnev pointed out in his speech at the November (1979) Plenary Session of the CPSU Central Committee that most of our personnel are undoubtedly party people who know their job and know how to work and solve the posed problems. However, some are encountered who, regardless of how much you talk to them and appeal to their conscience and feelings of duty and responsibility, cannot be helped. One must act decisively and replace those who cannot cope with the entrusted matter and one should more daringly advance energetic and creatively thinking comrades with initiative.

The working and political qualities of workers are still not being adequately studied in the sector and high exactingness is not always placed on management personnel.

Workers without initiative are frequently appointed to responsible production sections.

The turnover of management personnel in construction and construction and installation administrations is high. During the last three years alone, almost half the chiefs and a little more than half the chief engineers (of the total number) were replaced. Many among them were advanced to higher positions, but there were also those who were incapable of managing production.

There are significant deficiencies in personnel selection at the Association Soyuzgazpromstroy (expansion unknown). The management of the association poorly takes into account the knowledge and capabilities in appointment of workers and are complacent with the fact that important production sections are headed by people who do not have sufficient technical training and who are politically immature.

The managers of enterprises and their personnel services must approach more strictly and responsibly personnel selection for management positions.

V. I. Lenin taught how real organizers can be more carefully and patiently selected and identified and how they can be advanced after tenfold testing to responsible positions and how they are initially entrusted with the simplest and later with ever more difficult tasks. Lenin's approach to personnel analysis according to political and work features completely retains its significance today. The organizations and enterprises of the sector are mainly provided with trained and educated workers. The problem is to analyze the capabilities of a person correctly, to determine where he can manifest himself in the best manner, advance him at the proper time and help him to cope with matters. Success in this work is assured if there is a personnel reserve in the organization.

There is now a reserve of 200 specialists among the board and management of the ministry and their complement is being regularly restored. Those included in the reserve are communists, they have specialized education and practical working experience and many of them are being retrained at the Institute for Improvement of Qualifications (IPK) of management workers and specialists and at courses and seminars. A total of 124 specialists among this reserve was advanced to more responsible work in 1979 alone.

Systematic work with the personnel reserve is being carried out at the association's Tatneftestroy (expansion unknown), Sibkomplektmontazh (expansion unknown), Glavsibtruboprovodstroy [Main Administration for Pipeline Construction in Siberia], Glavtyumenneftegazstroy [Main Administration for Construction of Petroleum and Gas Industry Enterprises in Tyumen]

Oblast) and more attention has begun to be devoted to this problem at the trusts Vostokneftestroy (expansion unknown), Promstroymaterialy (Trust of the Construction Materials Industry), Vostoknefteprovodstroy (Trust for Petroleum Pipeline Construction in the Eastern Regions) and others.

A natural reserve for advancement are deputy managers. However, skillful organizers must be sought among all specialists. It is especially important to study the capabilities of middle-level workers since there are many capable people worthy of advancement here.

Practice showed the need to expand worker selection criteria so that they universally reflect the worker's merits and deficiencies. The requirements which specialists in one or another position should meet must be clearly formulated.

It should be noted that work on creation and training of a personnel reserve is being carried out poorly at many organizations and enterprises of the sector. Significant deficiencies in this important matter are being permitted at Glavkomigazneftestroy (Main Administration for Construction of Gas and Petroleum Industry Enterprises in the Komi ASSR), the associations Soyuzgazpromstroy (All-Union Association for Construction of Gas Industry Enterprises), Privolzhskgazpromstroy (Association for Construction of Gas Industry Enterprises in the Volga Area) and the trusts Uralneftegazstroy (Trust for Construction of Oil and Gas Industry Enterprises in the Urals), Tomskgazstroy (Tomsk Trust for Construction of Gas Industry Enterprises), Omsknefteprovodstroy (Omsk Trust for Petroleum Pipeline Construction), Ukrzapadneftegazstroy (Trust for Construction of Petroleum and Gas Industry Enterprises in the Western Ukraine) and Surgutgazstroy (Surgut Trust for Construction of Gas Industry Enterprises). Thus, the comments of the people who know him and the opinion of the collective where he works are not always taken into account when including a worker in the reserve. Moreover, the opinion of colleagues in this question is a serious guarantee against errors in selection of specialists. The proper attention is not being devoted to systematic training of specialists for advancement who are included in the reserve. Many of them are not being retrained for prolonged periods in the system for improving the qualifications of personnel.

The use of special procedural materials should contribute to improvement of work in creation of a personnel reserve for advancement. Improvement of activity in selection of the personnel reserve will permit an improvement of the qualitative composition of managers and engineering and technical personnel.

An important link in personnel work is certification. It has a positive effect on increasing their political maturity, work training and creative activity and contributes to more objective evaluation of them.

Certification in the construction subdivisions and at industrial enterprises has been going on for more than five years and it began even earlier

in the scientific research and planning and design organizations of the sector. The results of certification indicate its positive effect on personnel selection and placement.

Certification is being carried out in an organized and businesslike manner at the Tatneftstroy Association, at Glavneftegazstroymekhanizatsiya [Main Administration for Petroleum and Gas Construction and Mechanization], Glavtyumenneftegazstroy and Glavneftegazpromstroymaterialov [Main Administration for Petroleum and Gas Construction Materials Industry]. Up to 70 percent of the workers have been certified here as a result. Many specialists were elevated in the positions occupied and were included in the reserve for advancement according to the recommendations of the certification committees.

Unfortunately, certification in some subdivisions is being reduced to formal confirmation of the worker's fitness for the position occupied, materials are often formulated hurriedly, the worker's personal contribution is not revealed in them and deficiencies and shortcomings are smoothed over. It turns out that the recommendations and conclusions of the certification committees do not find practical realization. The managers of enterprises and organizations are not exercising the appropriate control over the activity of the committees and certification and are not extensively analyzing its results. Certification is being unsatisfactorily carried out specifically at the association Soyuzgazpromstroy, Glavkomigazneftstroy, Glavtruboprovodstroy and Glavvostoktruboprovodstroy. Certification has no planned feature in some organizations.

The existing deficiencies must be corrected.

A systematic increase and improvement of political and occupational knowledge and improvement of the work qualities of management personnel and specialists is a guarantee of successful implementation of the tasks faced by the collectives of Minneftegazstroy.

A system for retraining management and engineering and technical personnel exists in the sector. More than 10,000 persons were trained without a break in production during four years of the five-year plan and IPK, its branches and at the departments of vuzes, courses at technical schools and at organizations and enterprises.

Measures are being implemented for further improving the educational process according to the tasks of production. Existing academic programs have been reviewed and new ones have been developed which include timely problems for increasing the efficiency and quality of constructing major pipelines and surface objects and control and economics of construction.

Planning the retraining of personnel was improved, academic centers were specialized, groups were created for study of personnel included in the reserve, the instructor staff was strengthened and the use of technical facilities and active methods of teaching was expanded. Problems to strengthen the material and technical base of training centers are being resolved.

However, the existing system for raising the qualifications of managers and specialists does not completely meet the needs of the sector in personnel retraining.

Many main administrations, associations and trusts are not systematically fulfilling the personnel retraining plans and are not sending the established number of specialists for training. Thus, training of only 17 to 39 percent of specialists (compared to the plan) was carried out at Glavneftegazstroy, Glavvostoktruxprovozstroy, Glavneftegazzelektrospetsstroy (Main Administration for Petroleum and Gas Special Electrical Construction Work), Glavneftegazmontash (Main Administration for Petroleum and Gas Installation Work) and the associations Privolzhskgazpromstroy and Soyuzgazpromstroy. The plan for personnel retraining was fulfilled by only 70 percent in four years due to unsatisfactory direction of workers.

Training groups of the management staff of trusts and construction administrations are being staffed especially poorly. Many organizations are violating the procedure and deadlines for staffing training groups according to the duty, occupational and general educational level, workers are not being informed in time about forthcoming training and as a result up to 60 percent of the students are late in arriving for studies.

The opportunities for retraining of specialists on the job, in organizations and at enterprises are being poorly utilized. The managers of main administrations and associations are not participating properly in the training process and are giving few lectures to students on exchange of experience and analysis of specific production situations.

The developed situation requires a fundamental change of attitude by the managers of organizations to raise the qualifications of specialists and to direct personnel to training in strict accord with established plans. Additional measures must also be implemented to eliminate the permitted lag in personnel retraining.

Minneftegazstroy is mainly meeting the need for specialists with secondary specialized education due to its three technical schools (the Chelyabinsk, Al'met'yevka and Belgorod) and also the technical schools of other agencies. The ministry's technical schools, which have trained 5,000 specialists since the beginning of the five-year plan, have at their disposal the required material base and have well equipped training and laboratory buildings and dormitories. The training programs are justified and tied to time requirements.

However, the personnel training opportunities are still not being fully utilized and there are deficiencies in the activity of the indicated academic institutions. Organization of the training process requires further improvement. The opportunity to send young production leaders for training at the expense of organizations and enterprises must be utilized. The supervisory work of basic organizations requires serious improvement.

Up to 2,000 graduates with higher and secondary specialized education, including 850-900 engineers, are sent to the sector annually.

Education of young specialists, recruitment of them to active production and social activity and to acquire practical skills have appreciably improved recently. Young engineers are undergoing their probationary period in their assigned post. A total of 450 manager-trainees, who follow the creative growth of young engineers and assist them in application of knowledge obtained in practice, has been recruited to this work.

The seminars which are held at trusts, associations and main administrative boards for broad recruitment to active scientific and technical creativity are of great benefit to young specialists.

At the same time there are significant deficiencies in work with graduates of vuzes and technical schools. The fundamentals of law and existing regulations concerning young specialists are not being studied extensively at many main administrations, associations and trusts and the conditions which they required for development of production and creative activity and more complete practical use of knowledge obtained are not being created.

In some cases the young specialists arriving at organizations do not encounter the proper reception, the manager-trainees are not attached to them and individual work plans are not compiled. The chief engineers and personnel workers poorly study the work and political qualities of young specialists, do not exercise the proper control over their correct use and production growth and do not provide normal everyday conditions for them. As a result many young people leave the sector. An especially large number of young specialists are leaving SibNIPigazstroy (expansion unknown) and the association Soyuzgazpromstroy. This indicates that the managers and personnel workers are not properly monitoring the correct use of young engineers and technicians and arrangement of their everyday life.

Care and concern must be shown toward young specialists, their probationary period must be developed, the quality of probation must be improved and they must be more widely recruited to production and social activity.

This is even more important since young people, together with experienced personnel workers, engineers and scientists, must solve new complex tasks during the 11th Five-Year Plan.

The task of leading development of pipeline transport, not only for delivery of gaseous and liquid hydrocarbons, but of inert materials and coal as well, was posed at the second session of the Supreme Soviet of the USSR, 10th Convocation. The fact that more rapid development of the gas industry must be provided with a reduction of petroleum production rates was also discussed.

What problems must sector workers solve during the 11th Five-Year Plan? These are primarily increasing the rate of pipeline construction, concentration of engineering and human resources, consistency and priority in construction of facilities. The builders are now aiming to lay up to 1.5 runs of gas pipelines annually from Siberia to the Center, while bringing them up to full capacity. The annual increase of gas to 30 billion m³ planned by the party and government, can be ensured only under this condition.

Increasing labor efficiency and quality remains an important problem. More attention must be devoted to improving the work of the sector with available resources at the established technical and organizational level, technology and number of personnel. Only that which provides the greatest saving today should be introduced.

The problem of organization and management of production. The ministry has rearranged its work on the program-purposeful principle. Large production administrations and associations have been created. Positive results of this reorganization have already been achieved. The prospects of such a structural unit as complex flow must be checked in construction of new pipeline systems. In all cases the organizational changes and changes in administration should be closed on the primary production link where the construction programs are being implemented.

The problem of insulation and electrochemical protection of pipelines against corrosion. A radical solution at the given stage is construction of major oil and gas pipelines from pipe with plant-applied insulation. The volume of work with insulated pipes will increase significantly during the 11th Five-Year Plan. A complex of machines, machinery and devices must be developed for working with insulated pipes on the run.

The problem of pipeline welding. Universal introduction of the distributed production-line method of welding is required. Using this method, the brigade of B. P. Diduk, winner of the State Prize of the USSR, welded 120 kilometers of pipelines during the season and pledged to weld 150-160 kilometers. Development of the "Sever-1" complex for electric pressure contact welding of large-diameter pipes opens up new prospects. Powder rod welding using the "Styk" machine and gas-protected welding using the "Duga" machine will achieve further distribution.

The problem of eliminating the seasonal nature of construction in swampy regions. Solution of this problem requires production of special swamp equipment (for example, the "Tyumen'" swamp buggy). Development of self-propelled air-cushion vehicles must be worked on. Construction of roads along the route made from components that can be assembled and disassembled and those made from inflatable rubberized fabric must be studied.

Problems of constructing pipelines from multilayer pipes. A complex of investigations must be carried out to develop methods of welding, insulation and joining of multilayered pipes, the technology of stamping and welding

multilayer tee-pieces, elbows and adapters and development of methods for testing multilayer pipes for strength and stability.

The problem of further distribution of the complex-block method of construction. The third stage in development of this method, which provides the use of new, highly productive block production equipment, an open configuration of facilities are now being accomplished. Construction of cluster and compressor stations and oil and gas preparation facilities using superblocks up to 300 tons in mass and those for gas refining plants up to 1,000 tons in mass is being planned.

The list of enumerated problems poses the task of a sharp increase of the scientific and technical potential in the sector. And a special role belongs to scientific research and planning-design organizations, scientists and specialists.

The number of scientific personnel will increase in the sector. We now have almost 20 percent more doctors and candidates of sciences working than in 1975.

Giving important significance to increasing the role of scientists and acceleration of scientific and technical progress in the sector, the board of the ministry has adopted the resolutions: "On work of SibNIPigazstroy to increase the efficiency and quality of construction in Western Siberia" and "On the work of postgraduate students of VNIIST (All-Union Scientific Research Institute for the Construction of Trunk Pipelines)." However, the indicated resolutions are being fulfilled slowly.

Production specialists are still being weakly recruited for postgraduate training. Few opportunities are being utilized to train scientific workers in interagency postgraduate work. The managers of some organizations and enterprises are not creating the necessary conditions for postgraduate students to carry out experimental work on their dissertation topics."

Training of scientific workers must be improved and a persistent attempt must be made to see that the activity of each of them is closely related to the practical needs of the sector and to the real needs for development of science and production.

Staffing of constructed facilities with qualified working personnel is of special significance under conditions of the rampant growth of construction volumes.

The annual increase of workers at the construction projects of the sector reaches approximately 5,000 persons.

Not only quantitative but also qualitative change in the composition of working personnel occur with an increase of the technical level of construction. Their qualification level was increased and the average rank was

raised from 3.66 in 1975 to 3.88 in 1979. Every third worker has a secondary or secondary specialized education.

Dynamic growth of the population of practically all organizations of the ministry has been observed in Tyumenskaya Oblast for the past 7-10 years. This makes it possible to successfully solve the main tasks on development of the capacities of the petroleum and gas industry. Matters are worse with personnel at objects constructed by Glavvostoktruboprovodstroy, Glavneftegazstroy and the associations Soyuzgazpromstroy and Privolzhskgazpromstroy.

Personnel turnover in the sector is decreasing every year, but still remains significant. The stability of collectives has not yet been provided. The staff of workers at the Surgutgazstroy Trust is renewed almost annually and personnel are not being appointed in the organizations of Glavvostoktruboprovodstroy and the associations Soyuzgazpromstroy and Turkmenneftegazstroy.

Every fifth gas-arc welder is released from organizations of Glavvostoktruboprovodstroy.

The turnover among young people, usually no older than 25 years, who have little working experience and low qualifications, is especially high.

It was established that part of the workers are being released due to lack of spaces in preschool institutions, poor housing-service conditions, due to dissatisfaction with wages and so on. The turnover is explained not only by the severe climatic conditions and lack of amenities on the routes, but primarily by the low organization of work and idle times.

Instead of conducting daily, persistent work to recruit and strengthen personnel, some managers are involved in a parasitical position and count on supplementation of the work force only from centralized sources. Moreover, an intensified search for more efficient use of labor resources is required. A well-thought-out program for training workers and creating a base for training of qualified specialists is being successfully implemented at the associations Sibkomplektmontazh and Tatneftestroy, at the trusts Vostoknefteprovodstroy, Vostokneftestroy and some others. Unfortunately, Glavsibtruboprovodstroy, Glavtruboprovodstroy, Glavneftegazmontazh and some trusts of Glavneftegazstroy and Glavyushtruboprovodstroy do not yet have a clear plan to implement this important task.

More than 62,000 workers were trained and 136,600 persons raised their qualifications during the five-year plan in the existing sector system for training and raising qualifications.

More than 60,000 workers must be newly trained, of which no fewer than half are highly qualified machine operators and overhead electric welders and 120,000 persons must have their qualifications raised.

However, as shown by practice, some managers of main administrative boards, associations and trusts still have not adopted the necessary measures to fulfill the ministry's order directed toward improving the training of qualified personnel and consolidation of them.

Serious claims are being placed against the managers and personnel services of the trusts Nefteprovodmontazh, Volgogradneftegazstroy, Sredazneftegazstroy and some others for insufficient attention to selection of workers, directed toward training in multiple occupations. Some of the crudest violations of the principles of staffing the groups have been determined. Such a progressive form of training as course training with separation from production is being weakly utilized at Turkmenneftegazstroy and Glavukrneftegazstroy.

The probationary period of graduates after completion of schools is being inadequately accomplished. Upon completion of schools, workers are frequently utilized for a long time in other than their speciality and are finally released through their own desire.

The material and technical base of training centers requires further strengthening. Construction of the welders' school of Glavsibtruboprovodstroy at Tyumen' and the machine operators' school of Glavvostoktruboprovodstroy at Ufa is proceeding slowly. Some trusts of Glavkomigazneftestroy and Glavtyumenneftegazstroy do not have the necessary training buildings. More than 20 training-course combines and centers have not dormitories for students.

One of the important sources for supplementing the construction projects with personnel are the vocational trade schools.

Most construction organizations are devoting the proper attention to work with basic vocational trade schools and joint measures are being carried out to strengthen their training and material base. However, some subdivisions are not participating in this activity. Thus, Glavtyumenneftegazstroy has not created the necessary conditions for production training at GPTU-18 and GPTU-21 and the Tomskgazstroy Trust has not created the necessary conditions at GPTU-22. Work with basic GPTU requires significant improvement at Mangyshlakneftegazstroy and Tatnefteprovodstroy Trusts and Trust No 2 of the Soyuzgazpromstroy Association.

Special attention must be turned toward securing the graduates of technical schools. One must cope with the fact that a significant number of young workers are leaving the construction projects even during their first year.

One cannot think about successful solution of production problems without constant attention to education of qualified specialists and without further development of tutorship. This is even more important since young Komosomol detachments have now essentially become a new direction for formation of production collectives. The Central Committee of Young Komosomols is

rendering significant assistance to the sector. Practically all large construction projects of the ministry have been designated as All-Union shock projects to which young people are directed by public appeal.

Improvement of personnel work assumes further improvement of the housing and service conditions of workers and employees. However, some organizations are poorly resolving the housing problem and are not fulfilling the housing construction plans from year to year. Glavsibtruboprovodstroy and Glavtyumenneftegazstroy have slowed down work on construction of housing and cultural-service facilities. Glavvostoktruboprovodstroy, Glavkomigazneftestroy and the Tatneftestroy and Sibzhilstroy Associations are not fulfilling the plans for their own housing construction.

An increase in the rates of constructing housing and cultural-service facilities should become the subject of constant concern of managers of all ranks.

The most important task at present is to intensify work on communist education of the masses and to increase the effectiveness of political and educational activity. This work must be carried out with regard to the increased general educational and cultural level, the demands of the people, the dynamism of socioeconomic processes and the spiritual life of modern Soviet society.

The need for a complex approach to education of people is emphasized in the decree of the CPSU Central Committee "On further improvement of ideological and political-educational work." Their work should be evaluated not only on fulfillment of production plans, but the moral-political level in the collective and the state of discipline must also be taken into account. The measures worked out in the system of Minneftegazstroy in accordance with the indicated decree of the CPSU Central Committee are a specific plan of activity in this direction. Encompassing general problems of education, they are closely tied to the characteristics and specifics of the sector. Fulfillment of them will raise the level of the social and political life of construction collectives and will serve as a powerful impetus to activity and mobilization of production reserves.

However, ideological and educational work remains at a low level in some organizations. Meetings of managers with the collective are not held everywhere and little attention is being devoted to improving the material base of educational work.

The results are obvious where the managers are really imbued with responsibility for fulfilling the party's instructions on education of collectives. For example, the Sibkomplektnontazh Association has actively armed itself with the party's recommendations on intensification of ideological work. Ideological Planning meetings and unified political days are held here and a broad cultural program has been planned and is being implemented in which all aspects of the collective's life are taken into account. As a result

the collective has achieved high labor efficiency. Personnel turnover has been reduced in the Sibkomplektmontazh Association, it is developing its own traditions and people value the rank of avant garde builder.

It should be emphasized that work to improve the ideological education of workers is difficult and prolonged. It acquires especially timely significance under conditions of reorganization of the administration, carried out in the sector. An educational system which will provide stability and solidarity of organization must be created from the first days in the formed subdivisions.

Important tasks faced by the personnel services are related to transition to the new conditions of economic work.

The decree of the CPSU Central Committee and the USSR Council of Ministers on improvement of planning and the economic mechanism will determine for a long time the economic life both of the sector as a whole and of each organization and enterprise. Economic reform is being carried out under conditions of an intensive struggle to fulfill the tasks and socialist pledges. This places special responsibility on all managers and workers of economic services who have been called upon to implement within the shortest deadlines the entire complex of measures intended by the decree. Calendar plans of preparation to convert to work under the new conditions should be worked out for each main administrative board, association and trust and those responsible for development of individual sections of these plans should be determined.

The course of specific economic training for study of the essence of the planned measures by all engineering and technical personnel on the change of the planning, financing and crediting system and also of all instructions, procedural materials and legal acts concerning the reform should be carefully monitored.

The main administrations, associations and trusts of the board of Minneftegazstroy have been entrusted with improving organization of legal work and of strengthening the legal service and judicial personnel in subordinate subdivisions. Measures to improve legal training of economic managers and specialists in the system for raising qualifications and also for intensification of legal education work in labor collectives should be implemented simultaneously.

Thus, the tasks of improving work with management, engineering and technical and working personnel are inseparably related to the decisions of the November (1979) Plenary Session of the CPSU Central Committee, the decree of the CPSU Central Committee "On further improvement of ideological and political-educational work" and to the decree of the CPSU Central Committee and the USSR Council of Ministers "On improvement of planning and intensification of the effect of the economic mechanism to increase production efficiency and work quality."

The decree of the CPSU Central Committee "On the 110th anniversary of Vladimir Il'ich Lenin's birth" is of exceptionally important significance for increasing the level of ideological and educational activity and for increasing the creative activity of the workers of the sector as well as of all Soviet people. The need to turn special attention toward education of workers on the example of V. I. Lenin's life and activity and on the revolutionary, combat and labor traditions of the Communist Party and the Soviet people is emphasized in the decree.

The CPSU Central Committee calls on all communists, Komsomols and all Soviet people to celebrate V. I. Lenin's anniversary with new successes in the struggle for communism and to transform the final year of the 10th Five-Year Plan to a year of shock Leninist work.

The subdivisions of Minneftegazstroy have entered into a socialist competition with great enthusiasm and activity for a worthy celebration of the 110th anniversary of V. I. Lenin's birth. In order that this movement increase and expand from day to day, one must respond rapidly to the initiative of the labor collectives and adopt measures to disseminate leading experience.

Successful solution of the tasks advanced by the decree of the CPSU Central Committee "On the 110th anniversary of Vladimir Il'ich Lenin's birth" will depend largely on the level of personnel work.

There can be no doubt that the personnel services, like all collectives of the sector, will make a worthy contribution to fulfillment of the problems worth doing and will ensure through their selfless labor successful implementation of the decisions of the 25th CPSU Congress.

COPYRIGHT: Izdatel'stvo "Nedra", "Stroitel'stvo truboprovodov", 1980

6521

CSO: 1822

FUELS

OIL EQUIPMENT PRODUCTION PLANS NEED IMPROVEMENT

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 4, Apr 80 pp 125-127

[Article by S. Antsyperov, deputy general director for economics of the Volgogradneftemash Production Association, Volgograd: "Improvement in the Planning of Oil Equipment Production"]

[Text] In the system of measures provided by the 12 July 1979 decree of the CPSU Central Committee and the Council of Ministers, considerable attention is given to guaranteeing the continuity of planning, the interrelations of the plan indicators, and to setting up long-term production relations.

The necessity of changing the established planning procedure is felt, in particular, in the work of the Volgogradneftemash [Volgograd Petroleum Machinery] Association, which manufactures large-scale and complicated apparatus.

Guided by the general regulations, agencies of USSR Gosplan [State Committee for Supply] approve a specified plan of its production and issue a general schedule-order in November or December, that is, 30-60 days before the beginning of the year.

Such a practice of planning the output of large-scale equipment according to individual technical plans deprives the Volgogradneftemash Association of the possibility of performing timely and complete technical preparation of production, it creates artificial difficulties in material supply, and slows down the process of producing output. Ultimately the delivery deadlines are violated and the collective bears moral and material losses.

Let us consider the questions of the organization of the association's work in greater detail.

Simultaneously with the specified plan the planning institutes, and there are about 10 of them, issue only the technical or even the working drafts of the apparatus. It takes 3-6 months in order to make the blueprints, prepare the technological process, and calculate the norms of material outlays and the charts of labor-intensiveness.

The specified claims should be submitted to agencies of USSR Gosplan for the first half of the year being planned in August of the current year, and for the second half (taking into account the unfinished work and the carry-over warehouse remainders), in February.

In this way, 9-19 months pass before shipment of the product to the consumer, including in cycles: development of technical documentation, including norms of material outlays, 1-3; drawing up the specified claims for metal and assembly components, 6-8; and for production, 2-8 months.

Under the existing system of planning, drawing up the orders and selection of technical plans in the framework of the association are begun in April-May of the current year, 2-3 months after sending the specified claims to USSR Gosplan for the second half-year, in which compulsorily indicated are the need for metal for unfinished production and the warehouse standard reserves for jobs in the first month of the next year.

Since in February, that is, in the period of submitting the specified claims for the necessary materials, the unfinished output has not been made, the supply service orders the metal guided by the approximate need. The ordered metal is distributed among the shops, products and so on only in November-December of the current year, when the final plan of deliveries becomes known. In practice it happens that in the presence of the metal the apparatus to be manufactured turns out to be incomplete.

In individual production, each item is custom-made, in connection with which the need for steel of different type-sizes and brands often changes. Therefore strict organization of production according to deadlines and schedule-orders (specifications) is made difficult due to the absence of the necessary metal. As a result, in the first quarter of 1979 the association overfulfilled the plan for volume of production by 51 tons, but held back shipment of apparatus to the clients amounting to 491 tons. An analogous situation takes shape in other quarters as well.

In the association's plans not only are the deadlines for submission and approval of orders for metal not coordinated, but in addition the length of the production cycle is not taken into account. Thus, in the first and second quarters of 1980 the delivery of blocks of coking chambers with a weight of 1191 tons was included in the plan. The production cycle of their manufacture is 250 days. In order not to disrupt the set delivery deadlines, the association should have had the metal and begun fulfilling the assignment in October 1979. For this the order for metal should have been drawn up in February 1979, when the planning agencies were still not engaged in drawing up the specifications for the blocks. A discrepancy arose between the plans of production and the material supplies regarding the deadlines.

Every year specified plans are approved for the association in accurate accordance with the volume of output. But such a procedure seems to disrupt production activity for many months.

As was pointed out above, prolonged in the individual production facility is not just the production cycle, but also required is lengthy preparation of production--the compilation of technical documentation, joint solution of problems arising with the planning institutes, the designing and manufacture of special fittings, and others.

The work for preparation of production for the new year is begun in the second half year and is limited only to the plan of one year. Here is an example from practical experience. According to the preliminary specifications of the plan for 1980, still not approved as of 1 November 1979, it does not appear possible to manufacture in the established period 12 percent of the output due to a shortage of metal, and 6 percent due to non-solution of technical problems with the planning organizations.

The untimely receipt of specified plans of production and the impossibility of fixing in the annual specifications the carry-over (unfinished) apparatus for a minimum of 6 months following the planning year do not allow the technical and supply services to conduct systematic work throughout the whole year for preparation of production. The performance of the enterprises is negatively affected by the replacements of materials, caused by the indirect norms of deliveries, and also by the delays in deliveries of sheet steel of the designed cutting configuration by the metallurgists.

In our opinion, enterprises in heavy equipment building should have the specified plans of production (schedule-orders) a minimum of 12 months before the start of the planned year and together with these the carry-over (unfinished) apparatus for the half year following the planned period should be approved. In this case production will be provided with the physical resources, continuity of planning will be established, and the conditions will be created for rhythmical work, for deliveries of articles in the assigned periods.

Solution of the given problems depends not only on USSR Gossnab (Soyuzglavkhimneftemash), but also on the ministries--the ones ordering the products (Ministry of the Chemical and Petroleum Industry and Ministry of the Gas Industry) and the planning institutes, the ones working out the technical plans.

Removal of the indicator of product output in physical tons can play a large part in the improvement of planning.

On the initiative of the Ministry of Chemical and Petroleum Machine Building since 1977 the Volgogradneftemash Association has been making full set and large-block deliveries. The unit capacity of the apparatus has increased, but with this the weight has been reduced. The saving of physical resources has reached considerable scope.

The use of low-alloy 16GS and 9 GS steel instead of 3sp and 20K carbon steel reduced the weight of the products by 20-25 percent, but their

dimensions and productivity were preserved. As a result the annual saving of sheet steel has reached 2,000-2500 tons. The replacement in the equipment of monolithic stainless 1Kh18N10T steel with a two-layer steel (with a plating layer of stainless steel) has yielded a saving of 6-8 million rubles annually.

The output of products with a large unit capacity, as a rule, is connected with reduction in its weight and an increase in the labor-intensiveness of manufacture. Thus, since 1979 the association has been supplying absorbing apparatus for scrubbing gas according to a new, more progressive design, developed by the Moscow TsKBN [Central Design Bureau for Petroleum Machine building];

	Old design	New design
Capacity, million m ³ /day	3	5
Weight, tons	51.6	35.1
Labor-intensity of manufacture, thousand norm-hours	5.1	5.7

Just during the manufacture of these absorbers in 1979 there was an under-supply of 528 tons of petroleum equipment, and at the same time the labor-intensiveness rose by 19,000 norm-hours. Nine additional workers were required for their production.

The cited example shows graphically that planning and accounting of the output of petroleum apparatus in tons cannot serve as an objective evaluating indicator of the performance of the enterprise. The problem is not solved by measuring output according to value, in monetary terms. The cost evaluation does not stimulate a reduction in the expenditure of expensive and critical material (alloyed, brass and titanium rolled products) or of the weight of the apparatus.

Being supplied to oil refineries are new, more effective coking blocks with a capacity of 1,500,000 tons made of two-layer 16GS+OKh13 steel instead of blocks with a productivity of 600,000 tons of coke per year made of 1Kh18N10T steel. In this case the cost of 1 ton of the block has been reduced from 2,117 rubles to 1,820 rubles, and the labor-intensiveness has increased from 168 to 223 norm-hours per ton.

In our opinion, fulfillment of the plan for production of petroleum equipment in physical measurement should be evaluated in standard tons, reflecting the labor-intensiveness and the complexity of the products. We present the following data, characterizing the output of petroleum equipment in the last five-year plan in various measurements (in percent):

	1970	1975
Volume of production:		
in tons	100	82.1
in rubles (in prices as of 1 July 1967)	100	116.5
in standard tons	100	123.0
Coefficient of complexity of the apparatus	2.19	3.29

The reduction in the output in tons was connected with the sharp growth in the complexity of manufacture of large-block apparatus. Thus, while in 1970 2,300 tons of block apparatus was made, in 1975 6,000 tons of this apparatus was produced. Correspondingly there was an increase in the labor-intensity of 1 ton by 27.1 percent.

Our experience shows that standard tons, based on the labor-intensity and complexity of the equipment, reflect most accurately the rates of growth and the loading of the enterprise. If the planned capacity in 1975 was 0.72 physical tons, recalculated to standard tons it was 1.06. Under the new conditions of planning and evaluating the performance of an enterprise such deviations should be excluded.

It appears that the planning agencies, following the basic regulations of the 12 July 1979 decree of the CPSU Central Committee and the USSR Council of Ministers, will find more objective indicators for the output of petroleum equipment.

COPYRIGHT: Izdatel'stvo "Ekonomika", "Planovoye khozyaystvo", 1980

10908
CSO: 1822

FUELS

INDUSTRIALIZATION OF DERRICK ERECTION WORK

Moscow NEFTYANOYE KHOZYAYSTVO in Russian No 4, Apr 80 pp 16-20

[Article by M.I. Rabikhanukayev, V.M. Grazhdanki, R. Ye. Naftaliyev, V.G. Kravchenko, and L.I. Lopatkina of the North Caucasus Petroleum Scientific Research and Design-Experimental Institute: "Industrialization of Derrick Erection Work Within the Georgian Oil Extraction Association"]

[Text] Most of the deep-drilling oil prospecting work done by the Georgian Oil Extraction Association is accomplished with the aid of Uralmash-4E derricks, which are inadequate as to transportability and ease of assembly.

An analysis of rigging schedules for the erection of derricks revealed that the operations requiring the greatest expenditure of labor and materials within the overall complex of derrick work are: construction of oil well shelters using lumber, soft roofing, rubberized fabric and other materials; erection of monolithic concrete foundations put up during initial drilling; and the tying together of technological pipeline equipment when such work is done on the spot without the aid of couplings which can be easily and quickly assembled.

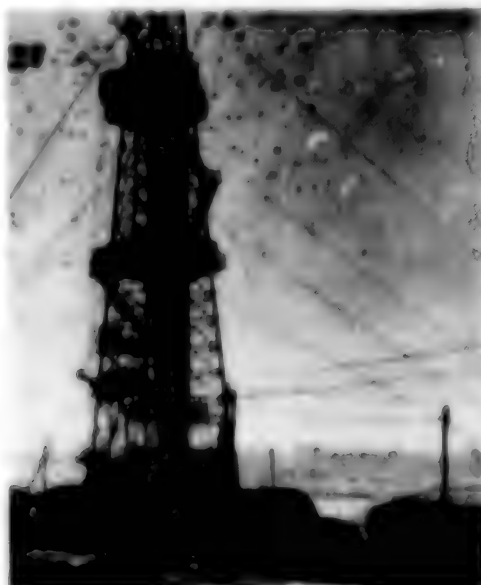
These operations are accomplished through a great volume of carpentry, equipment fitting, adjustment and welding work, on which 30 to 40 percent of production time is spent. Along with this, there is only a 30 to 40 percent recovery of lumber and pipe, while the concrete foundations are never utilized a second time.

One of the basic trends in raising the effectiveness of drilling rig construction is the industrialization of derrick erection work. Industrial methods together with the use of large prefabricated derrick units in Tatariya and Bashkiriya assisted in the successful conditions which exist in the North Caucasus (the uneven terrain of the area, complex geological conditions, etc) place increased requirements upon the complexity of the derricks required and upon the equipment and the technology of their erection. Acknowledged as the most rational method for the conditions under which the Georgian Oil Extraction Association operates is a combined installation method; under such a method, equipment in kinematic link is

installed on large prefabricated derrick units, while equipment in technological or power link is installed on small prefab units.

The working out and introduction of model erection diagrams, at the foundation of which lies this combined method of installation, has enabled us to industrialize construction and installation work through transfer of the mere labor intensive processes to plant conditions. For this purpose a complex of oil well shelters has been developed and introduced which are built in the form of a metal framework over which has been stretched a removable rubberized fabric covering. The covering is held onto the framework with the aid of special straps and buckles.

An experimental set of such oil well shelters was manufactured and installed in 1977 at Well No 227 of the Starogroznskiy Drilling Operations Administration (see Illustration 1). Over the elapsed period, the shelter has demonstrated its resistance to wind, heat and snow, which confirms the possibility for its repeated usage under Georgian Oil Extraction Association conditions.



Experimental prefabricated derrick units and drilling shelters at Well No 227 of the Starogroznskiy Drilling Operations Administration.

Derrick shelters (see Illustration 2) consist of 5 panels fastened to elements of the derrick and to special guy ropes (stretching wire or rods) with the aid of straps. These help cover the work area of a derrick which is 6 meters above where the drilling is going on. Pockets for 50-mm connecting pieces are provided in both the lower and upper portions of the panels. The upper connecting pieces are intended for suspending the shelter panels from special hooks attached to the derrick, while the lower

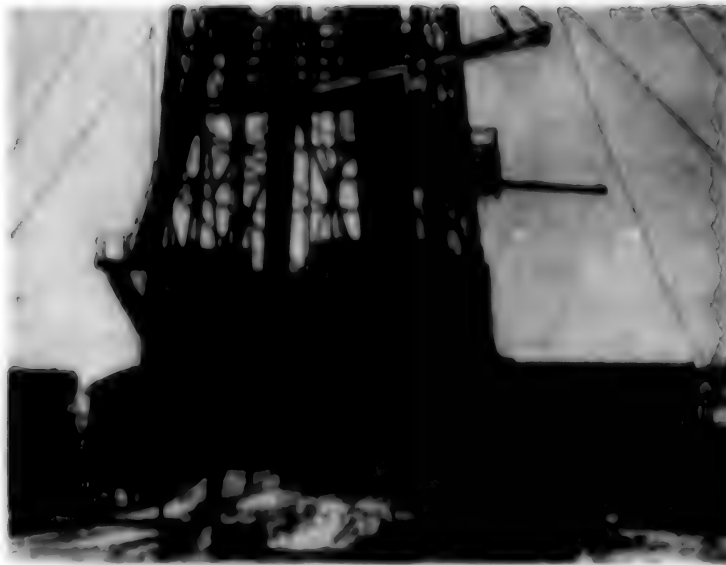
connecting pieces are for stretching the shelter panels. Nine windows (in the form of pockets) with glass and 2 doors are provided for along the perimeter of the shelter. A gateway consisting of two tent folds is located at the center of the derrick. On one of the side shelter panels elements are provided for joining the canvas covering of the derrick with the covers for either the winch electric drive (as on the Uralmash-4E) or for the diesel engine block (as on the Uralmash-3D).

The stand cover on the winch electric drive (see illustration 2a) consists of a metal frame, to which the rubberized fabric covering is attached. The arched-type metal frame (see illustration 2b) consists of 4 panels which are hinge-jointed with 2 girders attached to the foundation. The upper portion of the reversed panels are joined together by bolts. The stand cover consists of 2 sections--the side and upper panels, which fulfill the role of roof and walls. The canvas panels are joined together by an overlap and are attached to the metal frame by straps. The lower portion of the upper panel contains pockets into which extended connecting pieces have been inserted. The upper canvas panels are stretched equally on both sides from the top-most point of the metal frame. There are 3 windows and a door in the side panel.

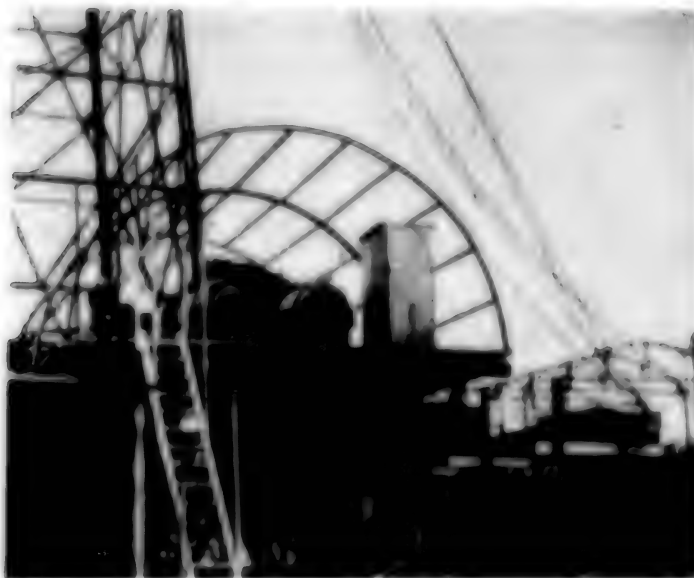
For housing the compressor and air collector plus the control station a universal small block in the form of a collapsible metal frame mounted on runners or sleds has been developed, the frame has a rubberized fabric canvas stretched over it. A block of similar design, but smaller in size, has been developed to house the diesel electric unit; it can also be utilized for such housekeeping needs as the storage of chemical reagents, spare parts and the like.

A special shelter, consisting of separate sections, has been developed to house drill pumps (see illustrations 3a and 3b). The number of sections is determined by the number of pumps. For the Georgian Oil Extraction Association, this shelter consists of three sections, which represent an extensive pivotal system. The legs of the sections, linked by hinges to the runners or sleds below and to the girders above, are formed from the side walls of hinged four-level units. To the flat surfaces of the girders parallel to the side walls are attached trusses, which are affixed to the girders by braces and beams. Roofing, consisting of wave-shaped galvanized sheets, is connected to the beams. Roof joints between sections are also covered with galvanized sheets. Hinged connections between legs and runners and between girders and wall surfaces are reinforced by angle braces.

Such a design for the sections allows them to be folded in transport (see illustration 3b) so as to decrease their height in traveling under electric transmission and other communication lines. To limit the folding of the four-level units, stanchions are placed under the end girders while a rigid angle iron holds one of every four legs in each four-level unit.



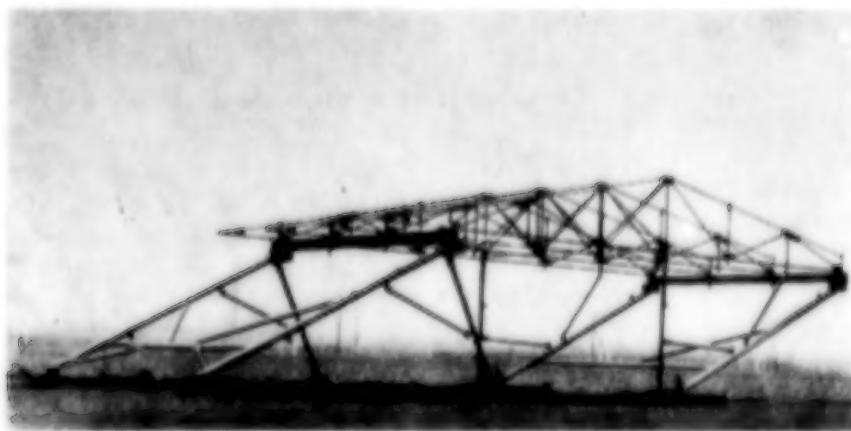
Canvas shelters for derricks and winch electric drive block



and shelter frame for the electric drive block



Drilling pump shelter and



a section of its framework folded for transport

The design which we are looking at facilitates its being folded, transported, and the return to working order of the shelter sections without being disassembled completely. Its dismantling consists of removal of roof sections and of canvas covering. Along the perimeter of the frame, the shelter is lowered by guy wires from the taut cable to which it is attached--the walls of it consisting of 2 side, 3 front and 3 rear panels, linked one to another on louvers and attached to the frame by a system of straps. The side and rear panels of shelters for drill pumps have 17 windows in them. The front wall is not covered completely (see illustration 3a)

in order to make it more convenient to service the drill manifold and circulation systems.

One of the most labor consuming tasks in the assembly of units during the bracing of drill rigs is putting together the tank in which the drilling solution is stored. In practice, these storage tanks are put together on the spot anew each time. At Well No 227, a block of shut-off devices for the auxiliary manifold was assembled; its operation proved both its workability and installation convenience. The block of shut-off devices consists of sleds or runners, within which have been installed intake conduits; to its forward section a collector with 4 outlets has been attached. By means of valves and stand pipes the outlets are connected to the storage tanks. The stand pipe in the upper portion is clamped into the tank by means of a collar in order to cut down on vibration. The collector is tied in with the auxiliary manifold. Drilling solution proceeds from the storage tank on into the conduit system through a receiving conduit and overflow pipes. Dismantling of the block consists of disconnecting the stand pipes and the auxiliary manifold, i.e., the volume of installation-dismantling work is reduced to a minimum.

For the purpose of reducing the volume of nonproductive work in the erection of derricks a complex of demountable reinforced concrete foundations which can be used repeatedly has been developed. The series production of metal frames and of canvas rubberized fabric shelters has been begun, while the question of the series production of demountable reinforced concrete foundations is now being resolved.

Preliminary calculations show that, with the introduction of the developments which we have just considered, the expenditure of lumber, soft roofing, and other construction materials is reduced by more than one-half, that the cost of and the time spent in the erection of derricks is reduced by 20 to 25 percent, that the quality of work done by derrick builders is improved, and that the outward appearance of drilling rigs is improved.

COPYRIGHT: Izdatel'stvo "Nedra," "Neftyanoye Khozyaystvo," 1980

9643

CSO: 1822

FUELS

UDC 622.592.4.052.012

INCREASED CAPACITY OF USINSK-YAROSLAVL' PIPELINE

Moscow STROITEL'STVO TRUBOPROVODOV in Russian No 2, Feb 80 p 11

[Article by I. Kulikova, Scientific Research Station of the NOT Center Neftegazstroytrud, Ukhta]

[Text] The capacity of the Usinsk-Ukhta-Yaroslavl' pipeline will be increased significantly when the Zelenoborskaya petroleum pumping station in the Komi ASSR becomes operational. This station is a complex of individual block boxes. The pumping units and electric motors are located in the largest of them. Well-appointed living quarters are provided for the maintenance personnel.

The general construction work on erection of the station was carried out by a brigade from SMU-22 [Construction and installation administration] of the Promstroy Trust of Glavkomigazneftegstroy [Main Administration for Construction of Gas and Petroleum Enterprises in the Komi ASSR], which played the role of general contractor of the construction project. Among the subcontracting organizations are UMR-8 [expansion unknown] of the same trust, SU-4 [Construction administration] of the Soyuzmontazhgaz Trust, the Prommontazh Trust and so on.

Among the collectives participating in construction of the station, the welder-installation section from SMU-22 of Promstroy, headed by N. I. Oleshchuk, has been rightfully recognized as one of the best. Completing the work on installation of the block boxes, water pipeline networks and sewer facilities, the section systematically surpassed the work norms by 50-60 percent.

The equipment for the pumping station was made in Czechoslovakia. A group of Czechoslovakian specialists rendered great assistance in setting up and adjusting the imported equipment.

COPYRIGHT: Izdatel'stvo "Nedra", "Stroitel'stvo truboprovodov", 1980

6521

CSO: 1822

END

**END OF
FICHE
DATE FILMED**

8 July 1980